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Indoor Air Quality and Vapor Intrusion Assessment: Report of Results

Residence, Parcel 26/ 05/ 05 – North
Wells G&H Superfund Site
Woburn, Massachusetts

May 2011

Submitted to:
United States Environmental Protection Agency Region 1
5 Post Office Square, Suite 100
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Prepared for:
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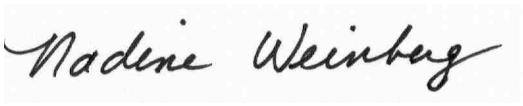

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1. Introduction

On behalf of UniFirst Corporation (UniFirst), ARCADIS has prepared this Indoor Air Quality and Vapor Intrusion Assessment: Report of Results for sampling conducted on April 21-22, 2011 at the northern half of the residential duplex in Woburn, Massachusetts, identified in the tax assessors' records as Woburn Parcel Number 26/ 05/ 05 (the Residence). ARCADIS conducted sub-slab soil vapor, indoor ambient air, and outdoor ambient air sampling. All work was completed in accordance with the *Vapor Intrusion Assessment Work Plan* (*Work Plan*) approved by the United States Environmental Protection Agency (USEPA) on February 17, 2011 (ARCADIS 2011).

As stated in the *Work Plan*, USEPA requested the collection of sub-slab soil gas, indoor air, and ambient air samples from certain residential and commercial properties located on Olympia Avenue, Oregon Avenue, and Marietta Street (Study Area). The Residence is one of the properties that USEPA identified for study. The *Work Plan* was submitted to and approved by USEPA to establish the sampling methods and procedures to be followed. The objectives of the sampling were to:

- Measure concentrations of volatile organic compounds (VOCs) in sub-slab soil vapor and indoor air at each property identified for study by USEPA in the Study Area.

- Measure concentrations of VOCs in outdoor air near these properties to evaluate atmospheric conditions at the time of indoor air sample collection.

The results of the vapor intrusion sampling, sampling methodology, a discussion of the sampling results including a preliminary human health risk evaluation, and recommendations for future actions are provided below.

2. Sampling Program

Consistent with the *Work Plan,* ARCADIS collected sub-slab soil vapor, indoor air, and ambient air samples from the Residence on April 21-22, 2011. Specific sampling methodologies were consistent with the *Indoor Air Quality and Vapor Intrusion Assessment Scope of Work – Revision 2* (*SOW*) (JCO 2010a) and the *Quality Assurance Project Plan – Revision 1* (*QAPP*) (JCO 2010b). Pre-sampling activities, sampling methodologies, and sample locations are described below. Sample logs are provided in Appendix A.

2.1 Pre-Sampling Activities

Prior to sampling, ARCADIS, in coordination with USEPA, was granted access to the Residence from the current property owner. Sample locations were agreed upon between USEPA, ARCADIS, and the current property owner. ARCADIS conducted a site reconnaissance prior to sampling to identify the building and foundation condition, building materials, heating, ventilation, and air conditioning (HVAC) operation, and potential preferential vapor migration pathways (i.e., sump pump, floor drains, cracks). To the extent feasible (the premises are leased to tenants), a product inventory was completed to list items observed in the building that may contain VOCs that could potentially interfere with sample results.

During the building survey the following potential background sources were identified:

- Bleach was noted in the home during the site visit, which may be a source of chloroform via reactions with other cleaning products (Odabasi 2008).

- Spray paint canisters were noted during the building survey. These could contain toluene.

- Various other cleaning products and aerosols were also noted during the product inventory.

Since indoor air sampling was conducted in both the basement and the first floor, the survey was conducted on both floors. All products found in the basement and first floor were containerized and removed from the home approximately 24 hours prior to sampling. The building survey and product inventory can be found in Appendix B.

2.2 Installation of Sub-Slab Soil Vapor Points

Two permanent sub-slab soil vapor sample points were installed in the basement of the Residence on April 20, 2011. Sample locations can be seen in Figure 1. Sample methods were consistent with those described in the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). The permanent sample points were constructed of decontaminated stainless steel fittings assembled prior to the field event. The permanent sample points were cemented into the drilled holes using hydraulic cement. The permanent sample points were allowed to equilibrate for at least 24 hours after installation prior to sampling. Detailed methods for permanent sample point installation are included in SOP-JCO-062 contained in the *QAPP* (JCO 2010b).Consistent with the *SOW* (JCO

2010a) and *QAPP* (JCO 2010b), a helium tracer test was completed prior to sampling each sub-slab soil vapor point to test the integrity of the probe installation.

2.3 Indoor Ambient Air Assessment

On April 21, 2011, indoor air sampling was initiated at two locations in the basement level of the Residence and one location in the first floor. Indoor air samples collected in the basement were co-located with the installed sub-slab soil vapor points. The basement of the Residence was furnished as a den / family room and is likely not occupied full time. Consistent with the *Work Plan*, an indoor air sample was collected from the first floor to ensure the primary living space was evaluated. The indoor air sample on the first floor was located in the kitchen. Sample locations are presented in Figure 1. Sample methods were consistent with the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). Samples were collected from the breathing zone (3 to 4 feet above ground surface) above each sub-slab soil vapor location. To avoid any cross contamination issues with potential vapors under the floor slab, indoor air samples were collected prior to sub-slab soil vapor samples. To ensure a reasonable worst case scenario, indoor air sampling was conducted with all exterior building doors closed to avoid any dilution with outside air.

Samples were collected over a 24-hour period in individually certified six-liter passivated sample canisters provided by Alpha Analytical, Inc. of Mansfield, Massachusetts (Alpha), a National Environmental Laboratory Accreditation Conference (NELAC) (E87814) certified laboratory. Canisters were analyzed for VOCs by USEPA Method TO-15 featuring selective ion monitoring (SIM). Detailed sample collection methods are included in the *SOW* (JCO 2010a) and in SOP-JCO-063 contained in the *QAPP* (JCO 2010b). Sample logs from indoor air sampling are included in Appendix A.

2.4 Outdoor Ambient Air Assessment

On April 21, 2011, outdoor air sampling was initiated at one upwind location outside the Residence using the same methods as described for indoor air samples. The sample was collected to understand what contribution the ambient environment may have on indoor air samples collected from inside the building. Sample locations are presented in Figure 1. The outdoor ambient air and indoor air samples were collected over approximately the same 24-hour time period, with the outdoor sample being started immediately prior to the indoor air samples. Sample logs from ambient air sampling are included in Appendix A.

2.5 Sub-Slab Soil Vapor Assessment

At the completion of the indoor air sampling on April 22, 2011, sub-slab soil vapor samples were collected from two sample locations in the Residence. Prior to sampling, three volumes of the sample tubing were purged utilizing a low-flow pump to remove any ambient air from the sampling train. Detailed methods for sampling are included in SOP-JCO-062 contained in the *QAPP* (JCO 2010b) and in the *Work Plan* (ARCADIS 2011). Samples were collected over a 30-minute period in individually certified six-liter passivated sample canisters provided by Alpha. Canisters were analyzed for VOCs by USEPA Method TO-15 featuring SIM. Sample logs from sub-slab soil vapor sampling are included in Appendix A.

2.6 Data Synthesis and Reporting

Analytical data packages generated by the laboratory were validated by Phoenix Chemistry Services according to national guidelines for tier III data validation as described in the *SOW* (JCO 2010a) and *QAPP* (JCO 2010b). The data review included: field documentation, proper holding times, proper chain-of-custody documentation, achievement of target reporting limits, acceptable laboratory calibrations and quality control parameters, and representativeness of duplicate results.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).
- Positive results for naphthalene greater than the sample-specific (adjusted) quantitation limit, but less than twice the blank concentration in samples IA-1 and IA-2 were qualified as less than the reported value (U).
- The result for xylenes in SS-1 was qualified as estimated (J).

Quality control results, including any revisions or qualifiers deemed necessary, are included in Tables 1 and 2. The data validation report is included in Appendix C. The laboratory analytical data package is included in Appendix D.

3. Results and Discussion

This section presents results for indoor air, ambient outdoor air, and sub-slab soil vapor samples collected at the Residence, including a summary evaluation of potential human health risks. A copy of the complete Preliminary Human Health Risk Evaluation can be found in Appendix E.

3.1 Indoor and Outdoor Ambient Air Sampling Results

Analytical data for indoor and outdoor ambient air samples are presented on Table 1. The following compounds were detected in all three indoor air samples: 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, benzene, carbon tetrachloride, chloroform, ethylbenzene, tetrachloroethene (PCE), toluene, and xylenes. Detected concentrations of these constituents are presented in Table 1.

The following constituents were detected in the outdoor ambient air sample: benzene, carbon tetrachloride, ethylbenzene, and toluene. Detected concentrations of these constituents are presented in Table 1.

A comparison of the data indicates that several constituents were detected in both outdoor and indoor air. Carbon tetrachloride was measured at similar concentrations in indoor and outdoor air. Although benzene, ethylbenzene, and toluene were detected in both outdoor and indoor air, concentrations were greater in indoor air compared to outdoor ambient air.

3.2 Sub-Slab Soil Vapor Sampling Results

Analytical data for sub-slab soil vapor are presented in Table 2. The following compounds were detected in both sub-slab soil vapor samples: 1,1,1-trichloroethane, chloroform, and PCE. Several constituents were only detected in one sub-slab soil vapor sample. Benzene, ethylbenzene, toluene, trichloroethene, and xylenes were detected only in SS-1; no chemicals were detected only in sample SS-2. Detected concentrations of these constituents are presented in Table 2.

3.3 Evaluation of Indoor Air and Sub-slab Soil Vapor Results

The data results for indoor air and sub-slab soil vapor were evaluated together to determine if indoor air samples were associated with a potential background source. As a first step, attenuation factors (AFs) were calculated to evaluate if chemicals

present in indoor air could potentially be associated with sub-slab soil vapor levels, or if chemicals may be attributable to background sources. The AF is the ratio of indoor air to sub-slab soil vapor results and was calculated when a constituent was detected in both indoor air and sub-slab soil vapor. AFs close to or greater than one indicate that indoor air concentrations are equal to or higher than sub-slab soil vapor concentrations and, therefore, that a background source likely is present. Of the 10 chemicals detected in indoor air, attenuation factors could be calculated for six. The remaining four constituents (1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, and carbon tetrachloride) were only detected in indoor air and an AF could not be calculated. Ethylbenzene, benzene, and xylenes had AFs greater than or close to one. As a result, the presence of these chemicals in indoor air is attributable to background sources and not soil vapor intrusion.

Second, the data were evaluated to identify constituents that were detected only in indoor air. These results indicate a background material is the only source of the detected indoor air concentrations. 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3-butadiene, and carbon tetrachloride were identified as having background sources based on this criterion.

Third, the results of indoor air and outdoor air samples were compared. Carbon tetrachloride was measured at a similar concentration in indoor and outdoor ambient air. These results indicate background sources are present in outdoor ambient air that are contributing to the detected carbon tetrachloride concentrations inside the Residence.

PCE was detected in indoor air at a lower concentration compared to the co-located sub-slab soil vapor samples. Sub-slab soil vapor therefore may be a contributing source of PCE detections in indoor air. The low concentrations of PCE detected, however, are consistent with those typically measured in residences, as reported by USEPA and the Massachusetts Department of Environmental Protection (MADEP). PCE was detected in indoor air samples in the Residence at concentrations between 0.291 and 0.366 µg/m^3. For PCE, USEPA's indoor air background database reported a 50th percentile value of 0.7 µg/m^3, a 75th percentile value of 1.4 µg/m^3, and a 90th percentile value of 3.8 µg/m^3 (Dawson 2008). The PCE concentrations measured in the Residence also are below the MADEP (2008) Threshold Value (TV) for PCE of 1.4 µg/m^3.

Benzene, chloroform, and toluene were all detected at slightly higher concentrations in sub-slab soil vapor than in indoor air. Concentrations of each constituent were very

low, with all indoor air concentrations of these constituents below MADEP TVs and consistent with typical background levels.

Benzene was detected in indoor air samples at concentrations between 0.881 and 0.99 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Benzene is a common component in gasoline, crude oil and cigarette smoke and is used in the production of paints, plastics, rubbers, fibers, dyes, lubricants, detergents, drugs, and pesticides (http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=14). USEPA's indoor air background database reported a 50th percentile value of 2.5 µg/m^3, a 75th percentile value of 4.5 µg/m^3, and a 90th percentile value of 10 µg/m^3 (Dawson 2008). The MADEP TV for benzene is 2.3 µg/m^3.

Chloroform was detected in indoor air samples at concentrations between 0.244 and 0.254 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Chlorine is commonly used to treat drinking water, swimming pools, spas, and municipal wastewater, and chlorinated tap water is a known source of chloroform to indoor air (http://www.epa.gov/ttnatw01/hlthef/chlorofo.html). USEPA's indoor air background database reported a 50th percentile value of 1.0 µg/m^3, a 75th percentile value of 2.4 µg/m^3, and a 90th percentile value of 4.1 µg/m^3 (Dawson 2008). Notwithstanding the incidence of chloroform in indoor air as a result of widespread uses of chlorine as a disinfectant, the MADEP TV for chloroform is 1.9 µg/m^3. Multiple background sources were identified in disinfecting products used within the Residence. These included products containing bleach, which are regularly used in the home to disinfect toys, tables, and other surfaces.

Toluene was detected in indoor air samples at concentrations between 2.65 and 2.95 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Toluene is a common component in gasoline and other fuels and is used in the production of paints, thinners, fingernail polish, lacquers, adhesives, and rubber (http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=29). USEPA's indoor air background database reported a 50th percentile value of 13 µg/m^3, a 75th percentile value of 27 µg/m^3, and a 90th percentile value of 51 µg/m^3 (Dawson 2008). The MADEP TV for toluene is 54 µg/m^3. Multiple background sources were identified in the building itself including spray paints.

According to MADEP, when compounds of concern are measured in indoor air at levels that are below TVs, it can reasonably be concluded that a complete vapor intrusion pathway does not exist.

3.4 Residence Human Health Risk Evaluation

Preliminary human health risk calculations were performed using the April 2011 validated indoor air data. The Preliminary Human Health Risk Evaluation Report and supporting calculations can be found in Appendix E. The conclusions from that report are summarized below.

Potential risks from indoor air were calculated assuming a homebound individual lives in the Residence for 30 years, 24 hours per day, and 350 days per year. For each constituent, the exposure point concentration in indoor air is equal to the average concentration of the three indoor air results. The estimated total cancer risk associated with long term exposure to indoor air in the basement and on the first floor of the home is $1x10^{-5}$, primarily associated with 1,2-dichloroethane, 1,3-butadiene, benzene, and chloroform. Only 6% of the total risk ($8x10^{-7}$) is associated with PCE. The majority of risk, therefore, is associated with background sources. Benzene and chloroform were detected at similar low concentrations in indoor air and sub-slab soil vapor. 1,2-Dichloroethane and 1,3-butadiene were not detected in sub-slab soil vapor or ambient air, indicating a source inside the home.

As previously discussed, many background sources of VOCs were noted in the basement and first floor of the home.

4. Summary and Conclusions

The potential carcinogenic risk level estimated for the low levels of PCE detected in the Residence is $8x10^{-7}$, a level of risk that is below the most conservative end of USEPA's risk range for Superfund sites. The estimated total risk, including exposure to other compounds in the Residence originating from background sources, is $1x10^{-5}$, primarily due to 1,2-dichloroethane, 1,3-butadiene, benzene and chloroform. The low concentrations of PCE detected in the basement and first floor of the Residence are consistent with those typically measured in residences, as reported by USEPA and MADEP. Measured concentrations are below the MADEP TV for PCE (1.4 $\mu g/m^3$). According to MADEP, when compounds of concern are measured in indoor air at levels that are below TVs, it can reasonably be concluded that a complete vapor intrusion pathway does not exist.

5. Recommendations

In accordance with the approved *Vapor Intrusion Assessment Work Plan: Off-Site Sub-slab and Indoor Air Evaluation* (ARCADIS 2011), another round of sampling will be conducted under non-heating season conditions for comparison to the first round of results.

6. References

ARCADIS. 2011. Vapor Intrusion Assessment Work Plan: Off-Site Sub-slab and Indoor Air Evaluation, Wells G&H Superfund Site, Woburn, Massachusetts. January 7.

Dawson, Helen. 2008. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences. Literature Review & Implications for Vapor Intrusion Assessment. Vapor Intrusion Workshop – AEHS Spring 2008, San Diego, California.

Massachusetts Department of Environmental Protection (MADEP). 2008. Indoor Air Threshold Values for the Evaluation of a Vapor Intrusion Pathway, Technical Update, Draft. June 26.

Odabasi, M. 2008. Halogenated Volatile Organic Compounds from the Use of Chlorine-Bleach-Containing Household Products. Environ. Sci. Technol. 42:1445-1451.

The Johnson Company (JCO). 2010a. Indoor Air Quality and Vapor Intrusion Assessment Scope of Work, Revision 2, UniFirst Property, Wells G&H Superfund Property. March 25.

JCO. 2010b. Quality Assurance Project Plan, Revision 1, Indoor Air Quality and Vapor Intrusion Assessment, UniFirst Property, Wells G&H Superfund Property. March 25.

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Table 1. Residential Indoor and Ambient Air Data

Sample Name: Location: Date Collected:	Units	IA-1 Basement 4/22/2011	IA-2 Basement 4/22/2011	IA-3 1st Floor 4/22/2011	Average Detected Concentration in Indoor Air	OA-1 Outdoor 4/22/2011
1,1,1-Trichloroethane	ug/m3	0.109 U	0.109 U	0.109 U	ND	0.109 U
1,1,2-Trichloroethane	ug/m3	0.109 U	0.109 U	0.109 U	ND	0.109 U
1,1-Dichloroethane	ug/m3	0.0809 U	0.0809 U	0.0809 U	ND	0.0809 U
1,1-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U
1,2,4-Trimethylbenzene	ug/m3	0.314	0.344	0.403	0.354	0.0982 U
1,2-Dibromoethane	ug/m3	0.154 U	0.154 U	0.154 U	ND	0.154 U
1,2-Dichloroethane	ug/m3	0.234	0.267	0.376	0.292	0.0809 U
1,2-Dichloropropane	ug/m3	0.0924 U	0.0924 U	0.0924 U	ND	0.0924 U
1,3-Butadiene	ug/m3	0.186	0.225	0.23	0.213	0.0442 U
1,3-Dichlorobenzene	ug/m3	0.12 U	0.12 U	0.12 U	ND	0.12 U
1,4-Dichlorobenzene	ug/m3	0.12 U	0.12 U	0.12 U	ND	0.12 U
Benzene	ug/m3	0.881	0.964	1.0	0.945	0.326
Bromodichloromethane	ug/m3	0.134 U	0.134 U	0.134 U	ND	0.134 U
Bromoform	ug/m3	0.206 U	0.206 U	0.206 U	ND	0.206 U
Carbon Tetrachloride	ug/m3	0.333	0.333	0.35	0.337	0.352
Chlorobenzene	ug/m3	0.092 U	0.092 U	0.092 U	ND	0.092 U
Chloroform	ug/m3	0.244	0.254	0.25	0.251	0.0976 U
cis-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U
Ethylbenzene	ug/m3	0.555	0.612	0.6	0.597	0.087
Isopropylbenzene	ug/m3	2.46 U	2.46 U	2.46 U	ND	2.46 U
Methylene Chloride	ug/m3	1.74 U	1.74 U	1.74 U	ND	1.74 U
Methyl tert-butyl ether	ug/m3	0.072 UJ	0.072 UJ	0.072 UJ	ND	0.072 UJ
Naphthalene	ug/m3	0.136 UJ	0.157 UJ	0.262 U	ND	0.262 U
Tetrachloroethene	ug/m3	0.366	0.366	0.29	0.341	0.136 U
Toluene	ug/m3	2.65	2.8	3	2.80	0.561
trans-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ	0.0907 UJ	0.0907 UJ	ND	0.0907 UJ
Trichloroethene	ug/m3	0.107 U	0.107 U	0.107 U	ND	0.107 U
Vinyl Chloride	ug/m3	0.0511 U	0.0511 U	0.0511 U	ND	0.0511 U
Xylenes (total)	ug/m3	1.58	1.81	2	1.78	0.26 U

Notes:

U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
ug/m3 - Micrograms per cubic meter
IA - Indoor air sample
OA - Ambient air sample
ND - Not detected

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Table 2. Residential Sub-slab Soil Vapor Data

Sample Name: Location: Date Collected:	Units	SS-1 Sub-Slab 4/22/2011	SS-2 Sub-Slab 4/22/2011	Average Detected Concentration Sub-Slab Soil Vapor
1,1,1-Trichloroethane	ug/m3	0.245	0.213	0.229
1,1,2-Trichloroethane	ug/m3	0.109 U	0.109 U	ND
1,1-Dichloroethane	ug/m3	0.0809 U	0.0809 U	ND
1,1-Dichloroethene	ug/m3	0.0792 U	0.0792 U	ND
1,2,4-Trimethylbenzene	ug/m3	0.0982 U	0.0982 U	ND
1,2-Dibromoethane	ug/m3	0.154 U	0.154 U	ND
1,2-Dichloroethane	ug/m3	0.0809 U	0.0809 U	ND
1,2-Dichloropropane	ug/m3	0.0924 U	0.0924 U	ND
1,3-Butadiene	ug/m3	0.0442 U	0.0442 U	ND
1,3-Dichlorobenzene	ug/m3	0.12 U	0.12 U	ND
1,4-Dichlorobenzene	ug/m3	0.12 U	0.12 U	ND
Benzene	ug/m3	1.32	0.223 U	**1.32**
Bromodichloromethane	ug/m3	0.134 U	0.134 U	ND
Bromoform	ug/m3	0.206 U	0.206 U	ND
Carbon Tetrachloride	ug/m3	0.126 U	0.126 U	ND
Chlorobenzene	ug/m3	0.092 U	0.092 U	ND
Chloroform	ug/m3	0.205	0.693	0.449
cis-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	ND
Ethylbenzene	ug/m3	0.59	0.0868 U	**0.59**
Isopropylbenzene	ug/m3	2.46 U	2.46 U	ND
Methylene Chloride	ug/m3	1.74 U	1.74 U	ND
Methyl tert-butyl ether	ug/m3	0.072 UJ	0.072 UJ	ND
Naphthalene	ug/m3	0.262 U	0.262 U	ND
Tetrachloroethene	ug/m3	53.2	154	104
Toluene	ug/m3	6.4	0.188 U	**6.4**
trans-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	ND
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ	0.0907 UJ	ND
Trichloroethene	ug/m3	0.161	0.107 U	**0.161**
Vinyl Chloride	ug/m3	0.0511 U	0.0511 U	ND
Xylenes (total)	ug/m3	1.8 J	0.26 U	**1.8**

Notes:

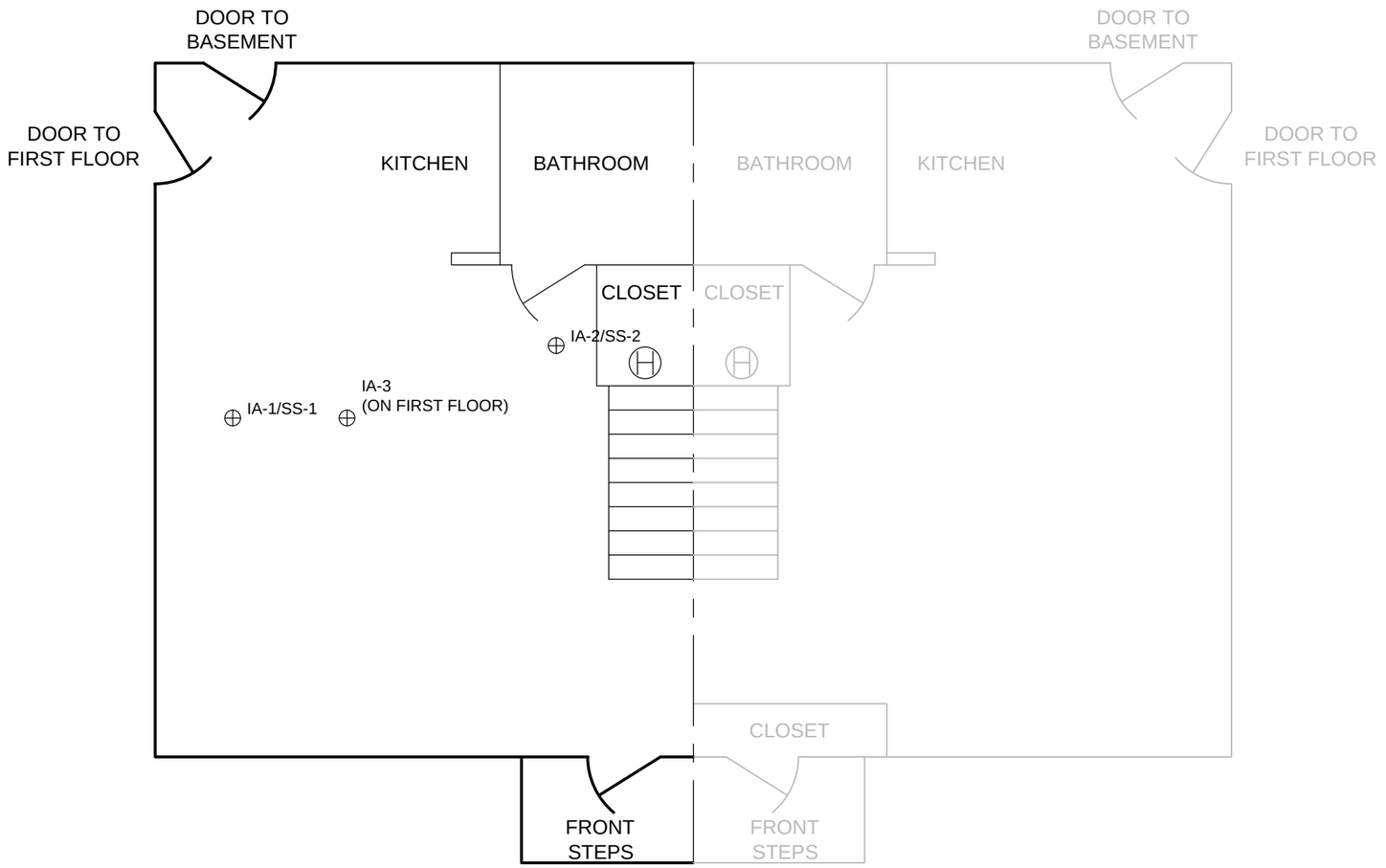
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

ug/m3 - Micrograms per cubic meter

SS - Sub-slab soil vapor sample

ND - Not detected

Bold - Value given is detected concentration only, as compound was detected in one sample only.



LEGEND:

⊕ SAMPLING LOCATION

Ⓗ HOT WATER HEATER

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. NOT TO SCALE.

UNIFIRST CORPORATION
WOBURN, MA

INDOOR AIR QUALITY AND VAPOR INTRUSION ASSESSMENT: REPORT OF RESULTS

RESIDENCE SAMPLE LOCATIONS - APRIL 2011

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FIGURE
1

CITY: SYRACUSE, NY DIV/GROUP: 141/ENVCAD DB: L.POSENAUER LD:(Opt) PIC:(Opt) PM: N.WEINBERG TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVITY\MA000989\0002\00005B\DWG\OREGAN\00989G01.DWG LAYOUT: 1 SAVED: 5/11/2011 5:11 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: C:\LB-PDF-CONV PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 5/11/2011 5:11 PM BY: STOWELL, GARY
XREFS:
00989X01
00989XBL
IMAGES:
PROJECTNAME: ----

Appendix A

Sampling Logs

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Indoor Air Sample Collection Log

		Sample ID:	IA-01
Client:	Uni First	Outdoor/Indoor:	indoor
Project:	Wells G & H	Sample Intake Height:	4'
Location:	Woburn, MA	Tubing Information:	—
Project #:	MA000989.7.3	Miscellaneous Equipment:	—
Samplers:	M Wachsman	Time On/Off:	
Sample Point Location:	REDACTED Basement	Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/11	1083	-30" Hg	66.2°F	47%	0	29.85	
4/22/11	0854	-6.8"					
	1003	-5.6"	67.3°F	49%	0	30.36	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	696
Flow Controller ID:	4200
Notes:	

General Observations/Notes:

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Indoor Air Sample Collection Log

		Sample ID:	IA-02
Client:	Uni First	Outdoor/Indoor:	Indoor
Project:	Wells G & H	Sample Intake Height:	4'
Location:	Woburn, MA	Tubing Information:	—
Project #:	MA000989.2.3	Miscellaneous Equipment:	—
Samplers:	M. Wacksman	Time On/Off:	
Sample Point Location:	REDACTED Basement	Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	1004	-30" Hg	66.2°F	47%	0	29.85	
4/22/2011	0855	-5.7" Hg					
	1004	-4.41"	67.3°F	49%	0	30.36	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (5L)
Canister ID:	1647
Flow Controller ID:	453
Notes:	

General Observations/Notes:

ARCADIS

Indoor Air Sample Collection Log

		Sample ID:	IA-03
Client:	UniFirst	Outdoor/Indoor:	Indoor
Project:	Wells G & H	Sample Intake Height:	4'
Location:	Woburn, MA	Tubing Information:	—
Project #:	MA000989.2.3	Miscellaneous Equipment:	—
Samplers:	M. Wacksman	Time On/Off:	
Sample Point Location:	REDACTED Kitchen on 1st Floor	Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	1012	-30"Hg	67°F	49%	0	29.84	
4/22/2011	0906	-8.2"Hg	64°F	45%	0	30.35	
	1013	-7.2"Hg					

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	1606
Flow Controller ID:	194
Notes:	

General Observations/Notes:

ARCADIS

Indoor Air Sample Collection Log

Client:	UniFirst	Sample ID:	OA-01
Project:	Wells G & H	Outdoor/Indoor:	Outdoor
Location:	Woburn, MA	Sample Intake Height:	
Project #:	MA000989.2.3	Tubing Information:	—
Samplers:	M Wacksman	Miscellaneous Equipment:	
Sample Point Location:	upwind of REDACTED	Time On/Off:	
		Subcontractor:	—

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed ~~(ft/min)~~	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	0958	-29.99	57°F	41%	6mph	29.84	
4/22/2011	0849	-3.4"	51.4°	41%	1mph	30.36	

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6L)
Canister ID:	1541
Flow Controller ID:	427
Notes:	

General Observations/Notes:

Sample is upwind of REDACTED

Wind blowing from West, quite Gusty on 4/21
Wind is blowing from NW on 4/22

ARCADIS

Subslab Soil Vapor Sample Collection Log

		Sample ID:	SS-1
Client:	UniFirst	Boring Equipment:	Drill
Project:	Wells G & H	Sealant:	Clay & hydraulic Cement
Location:	Woburn, MA	Tubing Information:	Teflon
Project #:	MA000989.23	Miscellaneous Equipment:	Purge Pump
Samplers:	M Wacksman	Subcontractor:	—
Sample Point Location:	REDACTED Basement, Northend	Equipment:	—
Sampling Depth:	4" Slab	Moisture Content of	Dry
Time and Date of Installation:	4/20/2011 10 am	Approximate Purge Volume:	1 Minute @ 50ml/min

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/21/2011	1118	-30" H_g	65.4°F	43.3%	0	30.36	
	1133	-17.8" H_g					
	1145 (*)	-8.4" H_g					

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	1636
Flow Controller ID:	040
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	60%
Final Helium Shroud:	49%
Tracer Test Passed:	(Yes) No
Notes:	No helium in Purge Air

General Observations/Notes:

(*) Flow controller made a Buzzing Noise so canister was closed early

Approximating One-Well Volume (for purging):

When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

ARCADIS

Subslab Soil Vapor Sample Collection Log

		Sample ID:	SS-2
Client:	UniFirst	Boring Equipment:	Drill
Project:	Wells G&H	Sealant:	Clay & Hydraulic Cement
Location:	Woburn, MA	Tubing Information:	Teflon
Project #:	MA 000909.0002.00003	Miscellaneous Equipment:	Purge pump
Samplers:	M Wackerman	Subcontractor:	
Sample Point Location:	REDACTED Near Utility Closet	Equipment:	—
Sampling Depth:	4" Slab	Moisture Content of	Dry
Time and Date of Installation:	4/20/2011 10:30 am	Approximate Purge Volume:	1 minute @ 50ml/min

Instrument Readings:

Date	Time	Canister Vacuum (a) (inches of Hg)	Temperature (°F or °C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure (inches of Hg)	PID (ppb)
4/22/2011	1132	-30"	65.4°F	43.3%	0	30.36	
	1147	-10"					
	1202	-5.6"					

(a) Record canister information at a minimum at the beginning and end of sampling

SUMMA Canister Information:

Size (circle one):	1 L (6 L)
Canister ID:	786
Flow Controller ID:	236
Notes:	

Tracer Test Information (if applicable):

Initial Helium Shroud:	63%
Final Helium Shroud:	52%
Tracer Test Passed:	(Yes) No
Notes:	No Helium in Purge

General Observations/Notes:

Approximating One-Well Volume (for purging):

When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL. Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

Appendix B

Building Survey, Product Inventory Field Form, and Associated MSDS Forms

REDACTED

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, Vermont 05602
(802) 229-4600

DRAFT

Indoor Air Quality Building Survey

Sampler: Wacksman Date: 4/20/2011 JCO #: _____

REDACTED

Address: _____

Woburn, MA

REDACTED

Contact Name: _____

List of Current Occupants/Occupation:

Age (if under 18)	Sex (m/f)	Occupation
Adult	M	Sheet metal installer
"	F	NA
"	F	NA
"	F	NA
Child 18mo	M	

Building Construction Characteristics:

What type of building is it? (Circle appropriate responses)

Single Family ~~Multi-Family~~ School Commercial Industrial

Duplex

Ranch
Raised Ranch
Cape
Colonial
Split Level
Mobile Home

2-Family
Duplex
Apartment House (# of units 2)
Condominium (# of units ____)
Other (specify) _____ Finished Basement + 2 floors

General description of building construction materials: poured walls

Number of occupied stories: 3 Year built? 1985

Has the building been weatherized with any of the following? (Circle all that apply)

Insulation Storm windows Energy-efficient windows Other (specify)

No new windows

Attached garage? (Y/N) N Vehicle(s) present? (Y/N) _____

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

What type of basement does the building have? (Circle all that apply)

(Full basement) Crawlspace Slab-on-grade Other (specify)

What are the characteristics of the basement? (Circle all that apply)

(Finished)	Basement Floor:	Foundation Walls:	Moisture:
Unfinished	(Concrete)	~~Poured concrete~~	Wet
Partially finished (%)	Dirt	Block	Damp
	Other (specify)	Field stone	(Dry)

Is a basement sump present? (Y/N) √ French drain outside Is sump sealed to indoor air? (Y/N) _____

Does the basement have any of the following characteristics (e.g., preferential vapor pathways) that might permit soil vapor entry? (Circle all that apply) Carpeted

Cracks Pipe/utility conduits Other (specify) Drain outside
Foundation/slab drainage Sump pumps

Heating and Ventilation System(s) Present:

What types of heating system(s) are used in this building? (Circle all that apply)

Hot air circulation Heat pump Steam Radiation Wood stove Baseboard, electric
Other (specify) Air conditioner (central/window) Fireplace (wood/gas)

What types of fuels are used in this building? (Circle all that apply)

Natural gas (Electric) Coal Other (specify)
Fuel oil Wood Solar

What type of mechanical ventilation systems are present and/or currently operating in this building? (Circle all that apply)

Central air conditioning Mechanical fans (Bathroom vent fan)
Individual air conditioning ~~Kitchen range hood~~ Air-to-air heat exchanger
Open windows Other (specify)

Sources of Chemical Contaminants:

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

Has the building been treated with any insecticides/pesticides? If so, how often and what chemicals were used? Not in last few years

Do any of the occupants apply pesticides/herbicides in the yard or garden? If so, how often and what chemicals are used? Yes, unknown how often

Outdoor Sources of Contamination:

Is there any stationary emission source in the vicinity of the building? Former Uni-First property water treatment system

Are there any mobile emission sources (e.g., highway; bus stop; high-traffic area) in the vicinity of the building?

Highway

Weather Conditions During Sampling:

Outside Temperature (°F): _____

Prevailing wind direction: _____

Describe the general weather conditions (e.g., sunny, cloudy, rain):

Was there any significant precipitation (0.1 inches) within 12 hours preceding the sampling event? _____

Type of ground cover (e.g., grass, pavement, etc.) outside the building: _____

General Comments

Is there any other information about the structural features of this building, the habits of its occupants or potential sources of chemical contaminants to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

Which of these are present in the building?

Potential VOC Source	Location of Source	Major Ingredients	Removed Prior to Air Sampling (Y/N/NA)
Paint or paint thinners	Basement	Water Based	N
Gas-powered equipment			
Gasoline storage cans			
Cleaning solvents			
Air fresheners	Basement	*	Y
Oven cleaners			
Carpet/ upholstery cleaners	Basement	*	Y
Hairspray			
Nail polish/ remover			
Bathroom cleaner	Basement / 1st Floor	*	Y
Appliance cleaner	Basement / 1st Floor	*	Y
Furniture/ floor polish	Basement / 1st Floor		
Moth balls			
Fuel oil tank			
Wood stove			
Fireplace			
Perfume/ colognes			
Hobby supplies			
Scented potpourri, etc	Basement / 1st Floor	*	Y
Brake cleaner			
Liquid Wrench			
Other			
Other			
Other			

*See Additional Product Inventory

Do one or more smokers occupy this building on a regular basis? NO

Has anyone smoked in the building in the last 48 hours? (Y/N) N

Do the occupants frequently have clothes dry-cleaned? (Y/N) N

Any recent remodeling or repainting (Y/N, describe) _____

Any obvious pressed wood products (e.g. hardwood plywood paneling, particleboard, fiberboard)? (Y/N) _____

Are there any new upholstery, drapes, carpets, or other textiles? (Y/N) N

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

ARCADIS

Chemical Inventory - 26/05/05 - North

Quantity	Name	Ingredient(s)	Notes
Basement			
	Fantastik Lemon Power spray bottle		
	Complete Odor Eliminator for Cats spray bottle		
	Bissell Little Green Formula		
	Complete Oxy and Orange Stain & Odor Remover	water, oxygen conc, orange extract	
	Rustoleum Bright Coat Metallic Finish		
	Journey's Water & Stain Repellant		
	Maintenance Pro Cleanser w/Chlorine Bleach		
	Bissell Pet Carpet & Upholstery Cleaner		
	Hot Shot Flying Insect Cleaner		
3	Off Insect Repellant Spray		
	Suspend SC Insecticide	deltanethrin	
	Color Place Spray Paint		
	Krylon Triple Thick Crystal Clear Glaze No. 0500		
	Zep 45 Penetrating Lubricant with Teflon spray		
	Rutland Furnace Cement		
1	enamel paint		
	Powerhouse Non-abrasive Bathroom Cleaner aerosol		
	Spic 'n Span Rainforest Spray		
	Rid-X Professional Septic System Treatment		
	plug-in air freshener		
	Fresh Step Litter Box Wipes		

ARCADIS

Chemical Inventory - 26/05/05 - North

Quantity	Name	Ingredient(s)	Notes
First Floor			
	LA's Total Awesome Cleaner spray		
	Powerhouse Fabric Refresher spray		
	Mr. Clean liquid		
	Oust Air Spray aerosol		
	Glade Tough Odor Solutions powder		
	Pledge		
	Zep Stainless Steel Cleaner Professional Strength aerosol		
	Quality Care Foaming Carpet Cleaner		
	Spic 'n Span		
	glass cleaner		
	bathroom and shower cleaner		
	Powerhouse Ultra Oxygen Cleaner		
	Scotchgard Carpet Protector		
	Foot Locker Sneaker Protector		
	Powerhouse Furniture Polish		
	bleach		
	Tarn-x Polish		
	Scotchgard Fabric and Upholstery Protector		
	haispray		
	styling gel		
	Glade Tough Odor Solutions spray		
	LA's Total Awesome Laundry/Pre-Wash		
6	Air Freshener		

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (866) 231-5406
International Emergency Phone:
(952) 852-4647

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (866) 231-5406

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	2	Health	2
3-High	4	Flammability	4
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... OUST® AIR SANITIZER - FRAGRANCE FREE
REASON FOR CHANGE..... Section 2. Section 3. Section 4. Section 5. Section 6. Section 7. Section 8. Section 10. Section 11. Section 13.
PRODUCT USE..... Household: Sanitizer

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT/TOXICITY
Triethylene glycol (CAS# 112-27-6).....	6.0	NOT ESTABLISHED
Isobutane (CAS# 75-28-5).....	7-13	NOT ESTABLISHED
Propane (CAS# 74-98-6).....	7-13	1000 ppm OSHA PEL , 2500 ppm ACGIH TWA
Butane (CAS# 106-97-8).....	10-20	800 ppm ACGIH/OSHA TWA
Ethyl alcohol (CAS# 64-17-5).....	50-70	1000 ppm ACGIH/OSHA TWA

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Eye contact. Skin contact. Ingestion. Inhalation.
EFFECTS OF ACUTE EXPOSURE:
EYE..... May cause: Moderate eye irritation.
SKIN..... Prolonged or repeated contact may cause: Drying/defatting of skin.
INHALATION..... Prolonged or repeated contact may cause: Irritation to nose, throat and respiratory tract. Central nervous system depression.
INGESTION..... May cause: Irritation to nose, throat and respiratory tract. Central nervous system depression.
MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE..... Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc., may be more susceptible to irritating effects.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... Flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, get medical attention.

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 4 - FIRST AID MEASURES (continued)

SKIN CONTACT.....	Wash contaminated area with water and soap. If irritation develops, get medical attention.
INHALATION.....	Remove to fresh air. If breathing is affected, get medical attention.
INGESTION.....	Immediately drink 1-2 glasses of water. Do not induce vomiting! Do not administer anything by mouth to an unconscious person. Get medical attention immediately.

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT.....	< 20°F (< -7°C) (TCC) (propellant)
FLAMMABLE LIMITS.....	Not available.
AUTOIGNITION..... TEMPERATURE	Not available.
EXTINGUISHING MEDIA....	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING... PROCEDURES	Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. Fire fighters should wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND..... EXPLOSION HAZARDS	Aerosol product - Containers may rocket or explode in heat of fire.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN... CASE MATERIAL IS RELEASED OR SPILLED	Eliminate all ignition sources. Dike large spills. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize. Rinse affected area thoroughly with water.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY..... INFORMATION	CAUTION: CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Exposure to temperatures above 120 F may cause bursting. MAY CAUSE EYE IRRITATION. Avoid contact with skin, eyes and clothing. KEEP OUT OF REACH OF CHILDREN.
OTHER HANDLING AND..... STORAGE CONDITIONS	Observe good personal hygiene practices. Wash thoroughly after handling. Keep from freezing.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.	No special requirements under normal use conditions. If mists/vapors are not adequately controlled by ventilation, use appropriate respiratory protection to prevent overexposure.
VENTILATION.....	General room ventilation is normally adequate. Substantial amounts of mists/vapors can be controlled with local exhaust ventilation or respiratory protection.
PROTECTIVE GLOVES.....	No special requirements under normal use conditions.
EYE PROTECTION.....	No special requirements under normal use conditions.
OTHER PROTECTIVE..... MEASURES	If major exposure is possible to eyes/skin, wear/use appropriate protective equipment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR.....	Clear, Colorless

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

PRODUCT STATE.....	Dispensed as a spray mist.
ODOR.....	Alcohol
pH.....	Not available.
ODOR THRESHOLD.....	Not available.
SOLUBILITY IN WATER....	Dispersible
SPECIFIC GRAVITY..... (H2O=1)	0.72
VAPOR DENSITY (AIR=1)..	Not available.
EVAPORATION RATE (BUTYL ACETATE=1)	Not available.
VAPOR PRESSURE (mm HG).	44.6 mm Hg
BOILING POINT.....	78.5°C (173°F)
FREEZING POINT.....	< 0°C (< 32°F)
COEFFICIENT OF..... WATER/OIL	Not available.
PERCENT VOLATILE BY.... VOLUME (%)	> 94
VOLATILE ORGANIC..... COMPOUND (VOC)	Hydrocarbon Propellant. Ethanol.
THEORETICAL VOC..... (LB/GAL)	Not available.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY.....	Stable
STABILITY - CONDITIONS. TO AVOID	Excessive heat.
INCOMPATIBILITY.....	Avoid contact with: Strong oxidizing materials (e.g. liquid chlorine).
HAZARDOUS DECOMPOSITION PRODUCTS	When exposed to fire: Produces normal products of combustion.
HAZARDOUS..... POLYMERIZATION	Will not occur.
HAZARDOUS..... POLYMERIZATION - CONDITIONS TO AVOID	None known.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX)..	5000 mg/kg (rat)
LD50 (ACUTE DERMAL TOX)	> 2000 mg/kg (rabbit)
LC50 (ACUTE INHALATION. TOX)	> 5 mg/L (rat)
EFFECTS OF CHRONIC..... EXPOSURE	None known.
SENSITIZATION.....	None known.
CARCINOGENICITY.....	None known.
REPRODUCTIVE TOXICITY..	None known.
TERATOGENICITY.....	None known.
MUTAGENICITY.....	None known.

OUST® AIR SANITIZER - FRAGRANCE FREE

Date Issued: 09Mar2007 **Supersedes: 14Apr2003**

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA.....	Not available.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL..... INFORMATION	PESTICIDAL WASTE - Observe all applicable Federal/ Provincial/ State regulations and Local/ Municipal ordinances regarding disposal of pesticide wastes. If possible, recycle empty aerosol can to nearest steel recycling center. Use up package or give to someone who can.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION.....	Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.
CANADIAN SHIPPING NAME.	OUST® AIR SANITIZER - FRAGRANCE FREE
TDG CLASSIFICATION.....	Not applicable.
PIN/NIP.....	Not applicable.
PACKING GROUP.....	Not applicable.
EXEMPTION NAME.....	Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION...	Not applicable.

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION.	NFPA 30B Level 3 Aerosol.
EPA REGISTRATION #.....	4822-293

PREPARATION INFORMATION

PREPARED BY.....	Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

PRINT DATE: 09Mar2007

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

1.PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**BISSELL** *Little Green Formula*
Product No.:	0497 / 0499
Chemical Formula:	Mixture

MANUFACTURER:

BISSELL INC.
P.O. Box 1888
Grand Rapids, MI 49501
(616) 453-4451

24-Hour Emergency Phone Number:

1(866) 303-6951

2.COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	Percent	Exposure Limits TWA	CAS Number
Acrylate Polymer	<1.5	Not Established	Proprietary

Also contains water, surfactants, fragrance and Preservative.

3. HAZARDS IDENTIFICATION

Emergency Overview:

KEEP OUT OF REACH OF CHILDREN.

Potential Health Effects:

Eye: Prolonged contact may cause eye irritation.
Skin: Prolonged contact with skin may cause temporary irritation.
Inhalation: No hazard in normal use.
Ingestion: Small amounts swallowed during normal handling operations are not likely to cause injury.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL *Little Green Formula*

4. FIRST AID MEASURES

EYE:	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention, if irritation persists.
SKIN:	Wash skin with water. Remove contaminated clothing.
INGESTION:	If swallowed, do NOT induce vomiting. Give a glass of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.
INHALATION:	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT:	None at/or below 212°F
FLAMMABILITY:	None.
EXTINGUISHING MEDIA:	Use water, water fog, CO2, dry chemicals or foam.
FIRE and EXPLOSION HAZARDS	None
FIRE FIGHTING EQUIPMENT:	Fire fighters should wear self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS:	Absorb and wipe up.
LARGE SPILL:	Contain spilled liquid with sand or earth. Place in a disposal container for disposal. After removal, flush area thoroughly with water.
WASTE DISPOSAL:	Follow all local, state and federal regulations for large spills.

7. HANDLING AND STORAGE

HANDLING:	Use only as directed. Avoid contact with eyes. Do not breathe vapors. Use with adequate ventilation. Wash hands before eating.
STORAGE:	Store OUT OF REACH OF CHILDREN. Keep container tightly closed when not in use.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL *Little Green Formula*

8. PERSONAL PROTECTION

RESPIRATORY PROTECTION:	Not required
PROTECTIVE GLOVES:	Not required
EYE PROTECTION:	Not required
VENTILATION:	Ensure good ventilation.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Pale yellow, clear liquid
ODOR:	Citrus Scent
BOILING POINT:	212°F (100°C)
FLASH POINT:	Not Determined
SOLUBILITY IN WATER:	Complete
SPECIFIC GRAVITY:	1.012
pH (concentrated product):	8.4
% Volatile Organic Compounds	0.0

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable
CONDITIONS TO AVOID:	None known
INCOMPATIBILITY:	Strong Oxidizing Agents
HAZARDOUS DECOMPOSITION:	None Known
HAZARDOUS POLYMERIZATION:	Will not occur

11. TOXICOLOGICAL INFORMATION

INGESTION:	The oral LD50 is greater than 5 g/kg in rats.
INHALATION:	The inhalation LC50 is greater than 20 mg/L for one-hour exposure for Laboratory animals.
SKIN:	The primary dermal irritation score is 0.21

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL Little Green Formula

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: No information available.
ENVIRONMENTAL EFFECTS: Not established.

13. DISPOSAL CONSIDERATIONS

DISPOSAL OF PRODUCT: Disposal methods must be in compliance with all Federal, State or Provincial, and local laws and regulations.
DISPOSAL OF PACKAGING: Disposal methods must be in compliance with all Federal, State or Provincial, and local laws and regulations.

14. TRANSPORT INFORMATION

TRANSPORTATION:

HAZARD RATING: Fire: 0 Toxicity: 0 Reactivity: 0

DOT Labeling: None
DOT Proper Shipping Name: Not Regulated
DOT Hazard Class: None
U.S. Surface Freight Classification: Cleaning compound, liquid, NOI

15. REGULATORY INFORMATION

EEC LABELLING INFORMATION:

Symbol:
Contains:
R Phrases:
S Phrases: S 2: Keep out of reach of children

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL ***Little Green Formula***

16. OTHER INFORMATION

Notice:

The information herein is presented in good faith and believed to be accurate as of the effective date shown below. However, no warranty, expressed or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, state or Provincial, and local laws.

Effective Date: March 13, 2008
Supersedes: June 6, 2008
Prepared by: Jesse J. Williams

This MSDS has been revised in the following section(s):

COMPOSITION/INFORMATION ON INGREDIENTS
TOXICOLOGICAL INFORMATION

MRF/sth

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: June 25, 2010

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: BISSELL Pet Carpet & Upholstery Cleaner
Product No.: **9352**
Chemical Formula: Mixture

MANUFACTURER: **24-Hour Emergency Phone Number:**

BISSELL Inc., 1-866-303-6951
P.O. Box 1888
Grand Rapids, MI 49501
(616) 453-4451

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	Percent	Exposure Limits TWA	CAS Number
Isobutane	< 5%	800 ppm	75-28-5
Propane	< 5%	1000 ppm	74-98-6

Also contains surfactant, acrylic polymer, inhibitors, fragrance and water.

3. HAZARDS IDENTIFICATION

Emergency Overview:

KEEP OUT OF REACH OF CHILDREN

Contents Under Pressure.

Potential Health Effects:

EYE: **E**ye contact causes irritation.
SKIN: **P**rolonged contact with skin may cause irritation.
INHALATION: **V**apor inhalation can cause respiratory tract irritation, headaches and dizziness.
INGESTION: Ingestion is not an expected route of exposure. Ingestion of small amount may cause gastrointestinal irritation, and more serious effects are possible if large quantities of product are swallowed

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: June 25, 2010

BISSELL Pet Carpet & Upholstery Cleaner

4. FIRST AID MEASURES

EYES: **I**mmediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower lids occasionally. Get medical attention.

SKIN: **T**horoughly wash skin with water. Remove contaminated clothing. Wash contaminated clothing before reuse.

INGESTION: **I**f swallowed, do NOT induce vomiting. Call a physician or Poison Control Center immediately. Never give anything by mouth to an unconscious person.

INHALATION: **R**emove to fresh air. If not breathing, give artificial respiration. Get medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT:	Not Determined.
FLAMMABILITY LIMITS:	**L**EL and UEL: Not determined
EXTINGUISHING MEDIA:	**C**O2, dry chemical foam.
FIRE and EXPLOSION HAZARDS:	**C**ontents flammable. Aerosol cans may burst if exposed to heat in excess of 120°F.
FIRE FIGHTING EQUIPMENT:	**W**ater may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat. Fire fighters would wear self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS: **A**bsorb and wipe up.

LARGE SPILLS: **V**entilate area. Remove all sources of ignition. Contain spilled liquid with sand or earth. Place in a disposal container for disposal.

WASTE DISPOSAL: **F**ollow all local, state and federal regulations for large spills.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: June 25, 2010

BISSELL Pet Carpet & Upholstery Cleaner

7. HANDLING AND STORAGE

HANDLING: **U**se only as directed. Avoid contact with eyes. Use with adequate ventilation. Wash hands before eating.

STORAGE: **S**tore OUT OF REACH OF CHILDREN. Do not store in direct sunlight, near open flames or at temperatures exceeding 120°F.

8. PERSONAL PROTECTION

RESPIRATORY PROTECTION:	**N**IOSH/OSHA approved respirator recommended when ventilation is restricted..
PROTECTIVE GLOVES:	**N**one required under normal use.
EYE PROTECTION:	**C**hemical goggles.
VENTILATION:	**G**ood general ventilation should be sufficient to control airborne levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	**A**erosol spray
ODOR:	**C**haracteristic fragrance.
BOILING POINT, 760 mm Hg:	**N**ot Determined.
VAPOR PRESSURE:	46 psig @ 70°F.
VAPOR DENSITY:	**I**s heavier than air.
SOLUBILITY IN WATER:	**N**egligible.
SPECIFIC GRAVITY:	~0.96

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	**S**table
CONDITIONS TO AVOID:	**O**pen flames or temperatures above 130°F.
INCOMPATIBILITY:	**S**trong oxidizing agents.
HAZARDOUS DECOMPOSITION:	**B**urning can produce carbon monoxide, possibly some toxic materials.
HAZARDOUS POLYMERIZATION:	**W**ill not occur

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: June 25, 2010

BISSELL Pet Carpet & Upholstery Cleaner

11. TOXICOLOGICAL INFORMATION

INGESTION:	Not determined.
INHALATION:	Not determined.
SKIN:	Not determined.

12. OTHER INFORMATION

HAZARD RATING: Fire: **1** Toxicity: **1** Reactivity: **0**

HAZARD RATING SCALE:

0=Insignificant **1**=Slight **2**=Moderate **3**=High **4**=Extreme

Transportation:

DOT Labeling:	**N**one
DOT Proper Shipping Name:	**C**onsumer Commodity
DOT Hazard Class:	**O**RM-D. Level 1 Aerosol. UN1950
U.S. Surface Freight Classification:	**C**leaning compound, NOI.

Notice:
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Effective Date: ***June 25, 2010***
Supersedes: ***June 11, 2008***
Prepared by: ***Kevin Haley***

This MSDS has been revised in the following section (16):

The Clorox Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

I Product:	CLOROX REGULAR-BLEACH
Description:	CLEAR, LIGHT YELLOW LIQUID WITH A CHARACTERISTIC CHLORINE ODOR

Other Designations	Distributor	Emergency Telephone Nos.
Clorox Bleach EPA Reg. No. 5813-50	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies call: (800) 446-1014 For Transportation Emergencies Chemtrec (800) 424-9300

II Health Hazard Data

DANGER: CORROSIVE. May cause severe irritation or damage to eyes and skin. Vapor or mist may irritate. Harmful if swallowed. Keep out of reach of children.

Some clinical reports suggest a low potential for sensitization upon exaggerated exposure to sodium hypochlorite if skin damage (e.g., irritation) occurs during exposure. Under normal consumer use conditions the likelihood of any adverse health effects are low.

Medical conditions that may be aggravated by exposure to high concentrations of vapor or mist: heart conditions or chronic respiratory problems such as asthma, emphysema, chronic bronchitis or obstructive lung disease.

FIRST AID:

Eye Contact: Hold eye open and rinse with water for 15-20 minutes. Remove contact lenses, after first 5 minutes. Continue rinsing eye. Call a physician.

Skin Contact: Wash skin with water for 15-20 minutes. If irritation develops, call a physician.

Ingestion: Do not induce vomiting. Drink a glassful of water. If irritation develops, call a physician. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air. If breathing is affected, call a physician.

III Hazardous Ingredients

Ingredient	Concentration	Exposure Limit
Sodium hypochlorite CAS# 7681-52-9	6.15%	Not established
Sodium hydroxide CAS# 1310-73-2	<1%	2 mg/m$^{3;1}$ 2 mg/m$^{3;2}$

[1]ACGIH Threshold Limit Value (TLV) - Ceiling

[2]OHSA Permissible Exposure Limit (PEL) – Time Weighted Average (TWA)

None of the ingredients in this product are on the IARC, NTP or OSHA carcinogen lists.

IV Special Protection and Precautions

No special protection or precautions have been identified for using this product under directed consumer use conditions. The following recommendations are given for production facilities and for other conditions and situations where there is increased potential for accidental, large-scale or prolonged exposure.

Hygienic Practices: Avoid contact with eyes, skin and clothing. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods.

Engineering Controls: Use general ventilation to minimize exposure to vapor or mist.

Personal Protective Equipment: Wear safety glasses. Use rubber or nitrile gloves if in contact liquid, especially for prolonged periods.

KEEP OUT OF REACH OF CHILDREN

V Transportation and Regulatory Data

DOT/IMDG/IATA - Not restricted.

EPA - SARA TITLE III/CERCLA: Bottled product is not reportable under Sections 311/312 and contains no chemicals reportable under Section 313. This product does contain chemicals (sodium hydroxide <0.2% and sodium hypochlorite <7.35%) that are regulated under Section 304/CERCLA.

TSCA/DSL STATUS: All components of this product are on the U.S. TSCA Inventory and Canadian DSL.

VI Spill Procedures/Waste Disposal

Spill Procedures: Control spill. Containerize liquid and use absorbents on residual liquid; dispose appropriately. Wash area and let dry. For spills of multiple products, responders should evaluate the MSDS's of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed, and/or poorly ventilated areas until hazard assessment is complete.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions. Strong oxidizing agent. Reacts with other household chemicals such as toilet bowl cleaners, rust removers, vinegar, acids or ammonia containing products to produce hazardous gases, such as chlorine and other chlorinated species. Prolonged contact with metal may cause pitting or discoloration.

VIII Fire and Explosion Data

Flash Point: None

Special Firefighting Procedures: None

Unusual Fire/Explosion Hazards: None. Not flammable or explosive. Product does not ignite when exposed to open flame.

IX Physical Data

Boiling point.....approx. 212°F/100°C
Specific Gravity (H_20=1) ..... ~ 1.1 at 70°F
Solubility in Water ..... complete
pH .....~11.4

DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH DATE PREPARED 05/05

Masterchem Industries LLC

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**Color Place Interior Latex Flat Medium Paint**
Product Number:	P320
Manufacturer Name:	Masterchem Industries LLC
Address:	3135 Old Highway M Imperial MO 63052-2834

U.S. Contact Info:

Business Phone:	(636) 942-2510
Technical Service Phone:	(800) 325-3552
Business Fax:	(636) 942-3663

Canadian Contact Info:

Business Phone:	(800) 661-1591
Technical Service Phone:	(800) 661-1591
Business Fax:	(403) 273-1128

For emergencies in the US, call CHEMTREC: 800-424-9300
In Canada, call CANUTEC: (613) 996-6666 (call collect)

NFPA

HMIS

HEALTH	1
FIRE	1
REACTIVITY	0
PPE	

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Lower Percent	Upper Percent
Clay (kaolin)	1332-58-7	10	30
Titanium dioxide	13463-67-7	10	30
Vinyl acrylic polymer	No data	10	30
Ethylene glycol	107-21-1	1	5
Amorphous silica	7631-86-9	0.1	1
Palygorskite	12174-11-7	0.1	1
Non-hazardous ingredients		30	60

SECTION 3: HAZARDS IDENTIFICATION

Product No. P320

Emergency Overview:	Irritant.

Applies to all Ingredients

Potential Health Effects:

Eye Contact:	May cause irritation.
Skin Contact:	May cause irritation.
Inhalation:	Prolonged or excessive inhalation may cause respiratory tract irritation.
Ingestion:	May be harmful if swallowed. May cause vomiting.
Chronic Skin Contact:	Prolonged or repeated contact may cause skin irritation.
Target Organs:	Eyes. Skin. Respiratory system. Digestive system.
Signs/Symptoms:	Overexposure may cause headaches and dizziness.
Aggravation of Pre-Existing Conditions:	None generally recognized.

SECTION 4: FIRST AID MEASURES

Product No. P320

Eye Contact:	Immediately flush eyes with plenty of water for 15 to 20 minutes. Get medical attention, if irritation or symptoms of overexposure persists.
Skin Contact:	Immediately wash skin with soap and plenty of water. Get medical attention if irritation develops or persists.
Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
Ingestion:	If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.
Other First Aid:	Due to possible aspiration into the lungs, DO NOT induce vomiting if ingested. Provide a glass of water to dilute the material in the stomach. If vomiting occurs naturally, have the person lean forward to reduce the risk of aspiration.

SECTION 5: FIRE FIGHTING MEASURES

Product No. P320

Flash Point:	No Data
Extinguishing Media:	Use alcohol foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this material.
Protective Equipment:	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Product No. P320

Personal Precautions:	Use proper personal protective equipment as listed in section 8.
Spill Cleanup Measures:	Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Provide ventilation. Clean up spills immediately observing precautions in the protective equipment section.
Environmental Precautions:	Avoid runoff into storm sewers, ditches, and waterways.

SECTION 7: HANDLING AND STORAGE

Product No. P320

Handling:	Use with adequate ventilation. Avoid breathing vapor and contact with eyes, skin and clothing.
Storage:	Store in a cool, dry, well ventilated area away from sources of heat, combustible materials, and incompatible substances. Keep container tightly closed when not in use.
Hygiene Practices:	Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling vapor or mist.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

Product No. P320

Engineering Controls:	Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.
Skin Protection Description:	Chemical-resistant gloves and chemical goggles, face-shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.
Hand Protection Description:	Wear appropriate protective gloves. Consult glove manufacturer's data for permeability data.
Eye/Face Protection:	Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.
Respiratory Protection:	A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.
Other Protective:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Ingredient Guidelines	Guideline Type	Guideline Information
Clay (kaolin)		
	OSHA PEL-TWA	OSHA PEL-TWA
	ACGIH TLV-TWA	ACGIH TLV-TWA
Ethylene glycol		
	ACGIH TLV-STEL	ACGIH TLV-STEL
Titanium dioxide		
	OSHA PEL-TWA	OSHA PEL-TWA

ACGIH TLV-TWA	ACGIH TLV-TWA

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Product No. P320

Physical State/Appearance:	Liquid
pH:	No Data
Vapor Density:	Greater than 1 (Air = 1)
Density:	10-12 Lbs./gal.
Molecular Formula:	Mixture
Molecular Weight:	Mixture
Flash Point:	No Data

SECTION 10: STABILITY AND REACTIVITY

Product No. P320

Chemical Stability:	Stable under normal temperatures and pressures.
Conditions to Avoid:	Heat, flames, incompatible materials, and freezing or temperatures below 32 deg. F.
Incompatibilities with Other Materials:	Oxidizing agents. Strong acids and alkalis.
Hazardous Polymerization:	Not reported.
Hazardous Decomposition Products:	Incomplete combustion may produce carbon monoxide and other toxic gases.

SECTION 11: TOXICOLOGICAL INFORMATION

Product No. P320

Titanium dioxide

Skin Effects:	Skin - Human: 300 ug/3D (Intermittent); Mild. (RTECS)
Ingestion Effects:	Ingestion - Rat TDLo: 60 gm/kg; Gastrointestinal - hypermotility, diarrhea Gastrointestinal - other changes (RTECS)
Carcinogenicity:	IARC: Group 3: Unclassifiable as to carcinogenicity to humans

Palygorskite

Carcinogenicity:	IARC: Group 2B: Possibly carcinogenic to humans

Ethylene glycol

Eye Effect:	Eye - Rabbit; Standard Draize : 500 mg/24H; Mild. Eye - Rabbit; Standard Draize : 1440 mg/6H; Moderate. (RTECS)
Skin Effects:	Skin - Rabbit; Open irritation : 555 mg; Mild. (RTECS)
Ingestion Effects:	Ingestion - Rat LD50: 4700 mg/kg; Details of toxic effects not reported other than lethal dose value Ingestion - Mouse LD50: 5500 mg/kg Details of toxic effects not reported other than lethal dose value. (RTECS)
Inhalation Effects:	Inhalation - Rat LC: >200 mg/m3/4H; Details of toxic effects not reported other than lethal dose value Inhalation - Mouse LC: >200 mg/m3/2H; Details of toxic effects not reported other than lethal dose value (RTECS)

Amorphous silica

Eye Effect:	Eye - Rabbit; Standard Draize : 25 mg/24H; Mild. (RTECS)
Ingestion Effects:	Ingestion - Rat LDLo: 5 gm/kg; Nutritional and Gross Metabolic - other changes (RTECS)
Inhalation Effects:	Inhalation - Rat LCLo: 2190 mg/m3/4H; Lungs, Thorax, or Respiration - dyspnea

	(RTECS)
Note	Not all toxicological studies are listed; a complete list can be found in the references

SECTION 12: ECOLOGICAL INFORMATION

Product No. P320

Ecotoxicity:	No ecotoxicity data was found for the product.
Environmental Fate:	No environmental information found for this product.

SECTION 13: DISPOSAL CONSIDERATIONS

Product No. P320

Waste Disposal:	Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines.

SECTION 14: TRANSPORT INFORMATION

Product No. P320

DOT UN Number:	No Data
DOT Hazard Class:	No Data

SECTION 15: REGULATORY INFORMATION

Product No. P320

Titanium dioxide

TSCA 8(b): Inventory Status:	Listed
State:	Listed in the New Jersey State Right to Know list. Listed in the Pennsylvania Hazardous Substances list.
Canada DSL:	Listed

Ethylene glycol

TSCA 8(b): Inventory Status:	Listed
State:	Listed in the New Jersey State Right to Know list. Listed in the Pennsylvania Hazardous Substances list.
Canada DSL:	Listed

Clay (kaolin)

TSCA 8(b): Inventory Status:	Listed
State:	Listed in the Pennsylvania Hazardous Substances list.
Canada DSL:	Listed

Amorphous silica

TSCA 8(b): Inventory Status:	Listed
State:	Listed in the Pennsylvania Hazardous Substances list.
Canada DSL:	Listed
Proposition 65:	Contains calcium carbonate (CAS:1317-65-3), which is listed in the TSCA inventory.

SECTION 16: ADDITIONAL INFORMATION

Product No. P320

MSDS Revision Date: 01/06/2006

MSDS Author: Actio Corporation

Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific materials designated. Refer to individual product safety Data sheets when using more than one product in combination with another.

References:

1. OSHA Hazard Communication Standard, 1910.1200 and Z Tables.
2. NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) and Pocket Guide to Chemical Hazards.
3. Sax Dangerous Properties of Industrial Materials. Tenth Edition.
4.Hawleys Condensed Chemical Dictionary, Thirteenth Edition
5. IARC monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, WHO International Research on Cancer, 2004.
6. Industrial Hygiene and Toxicology, by F.A. Patty.
7. National Library of Medicine, Department of Health and Human Services, Hazardous Substances Data Bank (HSDB).
8. National Toxicology Program (NTP) Tenth Report on Carcinogens, 2002.
9. Brethericks Reactive Chemical Hazards Database. Version 2.
10. Gassarett and Doulls Toxicology, The Basic Science of Poisons.
11. The Merck Index: An Encyclopedia of Chemicals and Drugs. Merck and Company. Twelfth Edition 1998.
12. Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environmental and Biological Exposure Indices. TLV Booklet, 2003.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

1.PRODUCT AND COMPANY IDENTIFICATION

Product Name:	**BISSELL** *Little Green Formula*
Product No.:	0497 / 0499
Chemical Formula:	Mixture

MANUFACTURER:

BISSELL INC.
P.O. Box 1888
Grand Rapids, MI 49501
(616) 453-4451

24-Hour Emergency Phone Number:

1(866) 303-6951

2.COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	Percent	Exposure Limits TWA	CAS Number
Acrylate Polymer	<1.5	Not Established	Proprietary

Also contains water, surfactants, fragrance and Preservative.

3. HAZARDS IDENTIFICATION

Emergency Overview:

KEEP OUT OF REACH OF CHILDREN.

Potential Health Effects:

Eye: Prolonged contact may cause eye irritation.
Skin: Prolonged contact with skin may cause temporary irritation.
Inhalation: No hazard in normal use.
Ingestion: Small amounts swallowed during normal handling operations are not likely to cause injury.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL *Little Green Formula*

4. FIRST AID MEASURES

EYE:	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention, if irritation persists.
SKIN:	Wash skin with water. Remove contaminated clothing.
INGESTION:	If swallowed, do NOT induce vomiting. Give a glass of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.
INHALATION:	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

5. FIRE FIGHTING MEASURES

FLASH POINT:	None at/or below 212°F
FLAMMABILITY:	None.
EXTINGUISHING MEDIA:	Use water, water fog, CO2, dry chemicals or foam.
FIRE and EXPLOSION HAZARDS	None
FIRE FIGHTING EQUIPMENT:	Fire fighters should wear self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS:	Absorb and wipe up.
LARGE SPILL:	Contain spilled liquid with sand or earth. Place in a disposal container for disposal. After removal, flush area thoroughly with water.
WASTE DISPOSAL:	Follow all local, state and federal regulations for large spills.

7. HANDLING AND STORAGE

HANDLING:	Use only as directed. Avoid contact with eyes. Do not breathe vapors. Use with adequate ventilation. Wash hands before eating.
STORAGE:	Store OUT OF REACH OF CHILDREN. Keep container tightly closed when not in use.

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL *Little Green Formula*

8. PERSONAL PROTECTION

RESPIRATORY PROTECTION:	Not required
PROTECTIVE GLOVES:	Not required
EYE PROTECTION:	Not required
VENTILATION:	Ensure good ventilation.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Pale yellow, clear liquid
ODOR:	Citrus Scent
BOILING POINT:	212°F (100°C)
FLASH POINT:	Not Determined
SOLUBILITY IN WATER:	Complete
SPECIFIC GRAVITY:	1.012
pH (concentrated product):	8.4
% Volatile Organic Compounds	0.0

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable
CONDITIONS TO AVOID:	None known
INCOMPATIBILITY:	Strong Oxidizing Agents
HAZARDOUS DECOMPOSITION:	None Known
HAZARDOUS POLYMERIZATION:	Will not occur

11. TOXICOLOGICAL INFORMATION

INGESTION:	The oral LD50 is greater than 5 g/kg in rats.
INHALATION:	The inhalation LC50 is greater than 20 mg/L for one-hour exposure for Laboratory animals.
SKIN:	The primary dermal irritation score is 0.21

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL Little Green Formula

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY: No information available.
ENVIRONMENTAL EFFECTS: Not established.

13. DISPOSAL CONSIDERATIONS

DISPOSAL OF PRODUCT: Disposal methods must be in compliance with all Federal, State or Provincial, and local laws and regulations.
DISPOSAL OF PACKAGING: Disposal methods must be in compliance with all Federal, State or Provincial, and local laws and regulations.

14. TRANSPORT INFORMATION

TRANSPORTATION:

HAZARD RATING: Fire: 0 Toxicity: 0 Reactivity: 0

DOT Labeling: None
DOT Proper Shipping Name: Not Regulated
DOT Hazard Class: None
U.S. Surface Freight Classification: Cleaning compound, liquid, NOI

15. REGULATORY INFORMATION

EEC LABELLING INFORMATION:

Symbol:
Contains:
R Phrases:
S Phrases: S 2: Keep out of reach of children

MATERIAL SAFETY DATA SHEET
BISSELL INCORPORATED
PRINT DATE: March 13, 2008

BISSELL ***Little Green Formula***

16. OTHER INFORMATION

Notice:

The information herein is presented in good faith and believed to be accurate as of the effective date shown below. However, no warranty, expressed or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with federal, state or Provincial, and local laws.

Effective Date: March 13, 2008
Supersedes: June 6, 2008
Prepared by: Jesse J. Williams

This MSDS has been revised in the following section(s):

COMPOSITION/INFORMATION ON INGREDIENTS
TOXICOLOGICAL INFORMATION

MRF/sth

MATERIAL SAFETY DATA SHEET

STANDARD PULSA SERIES AND PULSAR PAINT

I. Identification and Emergency Information

Product Name: Paint (Green)
Supplier: Pulsafeeder, Inc. P.O. Box 22909, Rochester, NY 14692 (716) 292-8000
Emergency Telephone: Mansfield Paint Co. (800) 434-9300
Information Phone: Mansfield Paint Co. (419) 522-9611
Product Class: Water Bourne Acrylic Enamel
Color: Lime Green

II. Hazardous Ingredients

DESCRIPTION	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS		VAPOR PRESSURE Hg @ TEMP	WEIGHT PERCENT
		OSHA PEL	ACGIH TLV		
BUTYL CELLOSOLVE	111-76-2	50	25	0.9 77^{O}F	11

III. Physical Data

Boiling Point:	Approximately 336^{o}F
Vapor Density:	Heavier than air
Coating V.O.C.:	3.31 lb/gal
Material V.O.C.:	1.62 lb/gal
Solubility in Water:	To approximately 15% solids
Appearance and Odor:	Lime green with Amine odor
Specific Gravity (H20=1):	1.0
Evaporation Rate:	Slower than ether

IV. Fire and Explosion Hazard Data

Flash Point: 212+^{o}F
Test Used: RTCC

Flammable Limits in Air by Volume:	Lower: N/A Upper: N/A
Extinguishing Media:	Carbon Dioxide, Alcohol Foam, Dry Chemical, Water Fog
Unusual Fire & Explosion Hazards:	None
Special Fire Fighting Procedures:	OSHA: Class II, DOT: Combustible Liquid. Material will not support combustion until water has evaporated. Dry films will support combustion. Wear self-contained breathing apparatus when fighting fires involving dried films.

MATERIAL SAFETY DATA SHEET

STANDARD PULSA SERIES AND PULSAR PAINT

V. Reactivity Data

Stability: Stable
Conditions to Avoid: Do not take internally, avoid prolonged inhalation and body contact.
Incompatibility (Materials to Avoid): Oxidizers
Hazardous Decomposition or By Products: May produce noxious fumes when heated to decomposition.
Hazardous Polymerization: Will not occur.

VI. Health Hazard Data

Inhalation Health Risks and Symptoms of Exposure: May cause irritation to nose, throat or lungs. May cause dizziness, headache, and nausea.

Skin and Eye Contact Health Risks and Symptoms of Exposure: Preexisting eye, skin, or respiratory disorders may be aggravated by exposure.

Skin Absorption Health Risks and Symptoms of Exposure: Preexisting eye, skin, or respiratory disorders may be aggravated by exposure.

Ingestion Health Risks and Symptoms of Exposure: May be harmful if swallowed.

Health Hazards (Acute and Chronic): Eyes: Flush with abundant water. Refer to physician. Excessive inhalation: Remove to fresh air, consult a physician. Overexposure to high concentrations of Butyl glycol Ether may cause damage to liver, kidneys, and red blood cells.

Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? YES
No constituents are listed as carcinogenic by NTP, IARC or OSHA

Medical Conditions Generally Aggravated by Exposure: Preexisting eye, skin, or respiratory disorders may be aggravated by exposure.

Emergency and First Aid Procedures: Eyes: Flush with abundant water. Refer to physician. Excessive inhalation: Remove to fresh air, consult a physician.

VII. Precautions for Safe Handling and Use

Steps to be Taken if Material Is Released or Spilled: Dam-up to limit spreading. Absorb on inert material. Before attempting clean-up refer to Section VI. Notify appropriate government authorities if spill enters sewers or regulated waters.

Waste Disposal Method: Dispose in accordance with local , State and Federal regulations.

Precautions to be Taken in Handling and Storing: Wash hands with soap and water before eating or smoking. DO NOT FREEZE. Keep closure tight and container upright. Do not store in areas of excessive heat or near open flame.

Other Precautions: Do not take internally. Avoid prolonged inhalation and body contact.

MATERIAL SAFETY DATA SHEET

VIII. Control Measures

Respiratory Protection:	Approved chemical/mechanical filters designed to remove combination of particulates and vapor. Air purifying respirators for concentrations below TLV limits. Air-supplying respirators for concentrations above TLV limits.
Ventilation:	Required to vent vapors and particulated matter emitted during spray application.
Protective Gloves:	Required for prolonged contact. Impermeable gloves, boots and aprons.
Eye Protection:	Recommended use of safety eyewear.
Other Protective Equipment:	None
Work/Hygienic Practices:	Wash hands before eating or smoking.

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of the seller's knowledge. However, since the conditions of handling and use are beyond our control, seller makes no warranty whatsoever, expressed, implied or of merchantability regarding the accuracy or completeness of such data or the results to be obtained from the use thereof. Further, seller assumes no responsibility for injury to buyer or to third persons or for damage to any property. Buyer assumes all such risks, including but not limited to compliance of user with all applicable Federal, State and local laws and regulations. Further, nothing contained herein is to be construed as a recommendation for use in violation of any patent or applicable laws and regulations.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1

Print Date 06/18/2008

Revision Date 06/09/2008

MSDS Number 350000004768

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™
Use of the Substance/Preparation	:	Hard Surface Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	yellow / liquid / pleasant
Immediate Concerns	:	Caution CAUSES EYE IRRITATION. Avoid contact with skin, eyes and clothing.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Moderate eye irritation
Skin	:	May cause skin irritation.
Inhalation	:	None known.
Ingestion	:	May cause irritation to mouth, throat and stomach.
Aggravated Medical Condition	:	Persons with pre-existing skin disorders may be more susceptible to irritating effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Deionized Water	7732-18-5	90.00 - 100.00
PROPYLENE GLYCOL MONO BUTYL ETHER	5131-66-8	1.00 - 5.00

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ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE	68391-01-5	0.10 - 1.00
ALKYL DIMETHYL ETHYL BENZYL AMMONIUM CHLORIDE (C12-14)	68956-79-6	0.10 - 1.00

4. FIRST AID MEASURES

Eye contact : Flush immediately with plenty of water for at least 15 to 20 minutes.
Get medical attention if irritation develops and persists.

Skin contact : Flush immediately with plenty of water for at least 15 to 20 minutes.
Get medical attention if irritation develops and persists.

Inhalation : Remove to fresh air.
If breathing is affected, get medical attention.

Ingestion : Do NOT induce vomiting.
Drink 1 or 2 glasses of water.
Never give anything by mouth to an unconscious person.
Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Alcohol foam, carbon dioxide, dry chemical, water fog

Specific hazards during fire fighting : Container may melt and leak in heat of fire.

Further information : Wear full protective clothing and positive pressure self-contained breathing apparatus.

Flash point : Note: no data available

Lower explosion limit : Note: no data available

Upper explosion limit : Note: no data available

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

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6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up	:	Soak up with inert absorbent material. Dike large spills. Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS. Avoid contact with skin, eyes and clothing.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required.
Hand protection	:	not required under normal use For prolonged or repeated contact use protective gloves.
Eye protection	:	No special requirements. If prolonged or repeated contact is possible: Wear splash-resistant Chemical goggles.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

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Form	:	liquid
Color	:	yellow
Odor	:	pleasant
pH	:	11.8 - 12.4
Boiling point	:	no data available
Flash point	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	not determined
Density	:	similar to water
Water solubility	:	soluble

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Strong acids
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	no data available
Acute inhalation toxicity	:	no data available
Acute dermal toxicity	:	no data available

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

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Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Not Available

13. DISPOSAL CONSIDERATIONS

Product	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation**

UN-Number:	None.
Proper shipping name	not regulated
Class:	None.
Packaging group	None.

Sea transport

- *IMDG:*

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

- *ICAO/IATA:*

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1 Print Date 06/18/2008

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15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.
	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
EPA Registration Number	:	4822-530

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	0
Reactivity	0

NFPA Ratings

Health	2
Fire	0
Reactivity	0

FANTASTIK® ANTIBACTERIAL ALL PURPOSE CLEANER - LEMON POWER™

Version *1*.1
Print Date 06/18/2008
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Special

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

The Clorox Pet Products Company
1221 Broadway
Oakland, CA 94612
Tel. (510) 271-7000

Material Safety Data Sheet

Product: FRESH STEP® LITTER BOX WIPES

Description: CLEAR, COLORLESS, THIN LIQUID WITH A FRUITY, APPLE ODOR ABSORBED INTO WHITE, NON-WOVEN WIPES

Other Designations	Distributor	Emergency Telephone Nos.
	Clorox Sales Company 1221 Broadway Oakland, CA 94612	For Medical Emergencies, call 1-800-446-1014. For Transportation Emergencies, call 1-800-424-9300 (Chemtrec).

II Health Hazard Data

Eye irritant. Prolonged skin contact may result in minor irritation.

No medical conditions are known to be aggravated by exposure to this product.

FIRST AID:

EYE CONTACT: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first minutes, and then continue rinsing eye. If irritation persists, call a doctor.

SKIN CONTACT: Wash skin with soap and water.

INGESTION: Drink a glassful of water. Call a doctor or poison control center.

INHALATION: Remove to fresh air. If breathing problems develop, call a doctor.

III Hazardous Ingredients

Ingredient	Concentration	Worker Exposure Limit
n-Alkyl (5% C_{12}, 60% C_{14}, 30% C_{16}, 5% C_{18}) dimethyl benzyl ammonium chloride CAS # 68391-01-5	< 0.3%	Not established.
n-Alkyl (68% C_{12}, 32% C_{14}) dimethyl ethylbenzyl ammonium chloride CAS # 68956-79-6	< 0.3 %	Not established.
Isopropyl alcohol CAS #67-63-0	1 - 5%	200 ppm - TLV-TWA[a] 400 ppm - PEL[b] 400 ppm - TLV-STEL[c]

[a]TLV-TWA = ACGIH Threshold Limit Value - Time Weighted Average

[b]PEL = OSHA Permissible Exposure Limit - Time Weighted Average

[c]TLV-STEL = ACGIH Threshold Limit Value - Short Term Exposure Limit

None of the materials in this product are on the IARC, OSHA, or NTP carcinogen lists.

IV Special Protection and Precautions

Hygienic Practices: Wash hands thoroughly with soap and water after handling.

Engineering Controls: Use general ventilation to minimize exposure to product mist.

Personal Protective Equipment: Wear safety glasses. Wear rubber or neoprene gloves for sensitive skin or if there is the potential for repeated or prolonged skin contact.

V Transportation and Regulatory Data

DOT: Not restricted per 49 CFR 173.120(a)(5).

IATA: Not restricted per IATA D.G.R. Section 3.3.1.3(c).

IMDG: Not restricted per IMDG Code Section 2.3.1.3.3.

EPA - SARA Title III/CERCLA: This product is regulated under Sections 311/312. This product contains no chemicals that are regulated under Section 313 or under Section 304/CERCLA.

VI Spill Procedures/Waste Disposal

Spill Procedures: Containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Waste Disposal: Dispose of in accordance with all applicable federal, state, and local regulations.

VII Reactivity Data

Stable under normal use and storage conditions.

VIII Fire and Explosion Data

Flash Point: 58°C (liquid, closed cup)

Fire Extinguishing Agents: Dry chemical, carbon dioxide (CO_2), foam, or water spray.

IX Physical Data

pH (liquid) ..... 5 - 7

Specific gravity (liquid) ..... ~1.0

Solubility in water (liquid) ..... Soluble

DATE PREPARED 4/2008

MATERIAL SAFETY DATA SHEET

MSDS # 110657003

GLADE PLUG-INS® - ISLAND BREEZE*

Date Issued: 13Apr2004 **Supersedes: 30Oct1996**

US MANUFACTURER:
S.C. Johnson & Son, Inc.
Phone: (800) 725-6737
Racine, Wisconsin 53403-2236
Emergency Phone: (888) 779-7920
International Emergency Phone:
(262) 886-1480

CANADIAN MANUFACTURER:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1
Transportation Emergency:
CANUTEC (collect) (613) 996-6666
Poison Control: (888) 779-7920

HAZARD RATING	HMIS	HAZARD	NFPA
4-Very High	2	Health	2
3-High	2	Flammability	2
2-Moderate	0	Reactivity	0
1-Slight		Special	
0-Insignificant			

DISTRIBUTED IN CANADA BY:
S.C. Johnson and Son, Limited
Phone: (800) 725-6737
1 Webster Street
Brantford, Ontario N3T 5R1

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME..... GLADE PLUG-INS® - ISLAND BREEZE*
REASON FOR CHANGE..... No significant changes.
PRODUCT USE..... Air care

SECTION 2 - INGREDIENT INFORMATION

INGREDIENT	WEIGHT%	EXPOSURE LIMIT/TOXICITY
Amorphous Fumed Silica (CAS# 7631-86-9).....	1-5	5 mg/m³ (RESPIRABLE DUST) , 10 mg/m3 (TOTAL DUST) ACGIH-NUISANCE DUST. (SUPPLIER RECOMMENDED)
Mixture of Perfume Oils.....	90-98	NOT ESTABLISHED

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also See Section 11)

ROUTE(S) OF ENTRY..... Skin contact.
EFFECTS OF ACUTE EXPOSURE:
EYE..... May cause: Moderate eye irritation.
SKIN..... May cause: Mild skin irritation.
INHALATION..... None known.
INGESTION..... None known.
MEDICAL CONDITIONS..... None known.
GENERALLY RECOGNIZED
AS BEING AGGRAVATED
BY EXPOSURE

SECTION 4 - FIRST AID MEASURES

EYE CONTACT..... Flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, get medical attention.
SKIN CONTACT..... Wash contaminated area with water and soap. If irritation persists, get medical attention.
INHALATION..... No special requirements.
INGESTION..... Seek immediate medical attention.

SECTION 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT..... 190°F (88°C) (TCC)

GLADE PLUG-INS® - ISLAND BREEZE*

Date Issued: 13Apr2004 **Supersedes: 30Oct1996**

SECTION 5 - FIRE AND EXPLOSION INFORMATION (continued)

FLAMMABLE LIMITS.....	Not applicable.
AUTOIGNITION..... TEMPERATURE	Not applicable.
EXTINGUISHING MEDIA....	Foam. CO2. Dry chemical. Water fog.
SPECIAL FIREFIGHTING... PROCEDURES	Normal fire fighting procedure may be used.
UNUSUAL FIRE AND..... EXPLOSION HAZARDS	No special hazards known.

SECTION 6 - PREVENTIVE RELEASE MEASURES

STEPS TO BE TAKEN IN... CASE MATERIAL IS RELEASED OR SPILLED	Eliminate all ignition sources. Dike large spills. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY..... INFORMATION	Do not remove or puncture clear film covering gel. Avoid contact with eyes. If such contact occurs, flush immediately with plenty of water for at least 15 to 20 minutes. If irritation persists, seek medical aid. Do not place open cartridges on finished wood surfaces. Keep out of reach of children.
OTHER HANDLING AND..... STORAGE CONDITIONS	Keep from freezing.

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.	No special requirements under normal use conditions.
VENTILATION.....	No special requirements.
PROTECTIVE GLOVES.....	No special requirements under normal use conditions.
EYE PROTECTION.....	No special requirements under normal use conditions.
OTHER PROTECTIVE..... MEASURES	No special requirements.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR.....	Clear Green
PRODUCT STATE.....	Gel.
ODOR.....	Fragrant
pH.....	Not applicable.
ODOR THRESHOLD.....	Not available.
SOLUBILITY IN WATER....	Negligible
SPECIFIC GRAVITY..... (H2O=1)	0.98
VAPOR DENSITY (AIR=1)..	Not available.
EVAPORATION RATE (BUTYL ACETATE=1)	Not available.
VAPOR PRESSURE (mm HG).	Not available.
BOILING POINT.....	Not available.
FREEZING POINT.....	Not available.
COEFFICIENT OF..... WATER/OIL	Not available.
PERCENT VOLATILE BY.... VOLUME (%)	95-99

GLADE PLUG-INS® - ISLAND BREEZE*

Date Issued: 13Apr2004 **Supersedes: 30Oct1996**

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES (continued)

VOLATILE ORGANIC COMPOUND (VOC)	Not available.
THEORETICAL VOC (LB/GAL)	Not available.

SECTION 10 - STABILITY AND REACTIVITY

STABILITY	Stable
STABILITY - CONDITIONS TO AVOID	Not applicable.
INCOMPATIBILITY	Not applicable.
HAZARDOUS DECOMPOSITION PRODUCTS	No special requirements.
HAZARDOUS POLYMERIZATION	Will not occur.
HAZARDOUS POLYMERIZATION - CONDITIONS TO AVOID	Not applicable.

SECTION 11 - TOXICOLOGY INFORMATION (Also See Section 3)

LD50 (ACUTE ORAL TOX)	Estimated to be greater than 5000 mg/kg (rats).
LD50 (ACUTE DERMAL TOX)	Not applicable.
LC50 (ACUTE INHALATION TOX)	Not applicable.
EFFECTS OF CHRONIC EXPOSURE	None known.
SENSITIZATION	None known.
CARCINOGENICITY	None known.
REPRODUCTIVE TOXICITY	None known.
TERATOGENICITY	None known.
MUTAGENICITY	None known.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA	Not applicable.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION	No special method. Observe all applicable Federal/ Provincial/ State regulations and Local/ Municipal ordinances regarding disposal of non-hazardous materials.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION	Not applicable.
CANADIAN SHIPPING NAME	GLADE PLUG-INS® - ISLAND BREEZE*
TDG CLASSIFICATION	Non-regulated.
PIN/NIP	Not applicable.
PACKING GROUP	Not applicable.
EXEMPTION NAME	Not applicable.

SECTION 15 - REGULATORY INFORMATION

WHMIS CLASSIFICATION	Non-regulated.

GLADE PLUG-INS® - ISLAND BREEZE*

Date Issued: 13Apr2004 **Supersedes: 30Oct1996**

SECTION 15 - REGULATORY INFORMATION (continued)

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

This product is not subject to the reporting requirements under California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION. Use as directed.
EPA REGISTRATION #..... Not applicable.

PREPARATION INFORMATION

PREPARED BY..... Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

PRINT DATE: 13Apr2004

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT

Version *1*.0

Revision Date 09/14/2009

Print Date 09/09/2010

MSDS Number 350000003803
SITE_FORM Number
30000000000000003138.001

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT
Use of the Substance/Mixture	:	Air Freshener
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	white / powder / pleasant
Immediate Concerns	:	Avoid contact with skin, eyes and clothing.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Mild eye irritation
Skin	:	May cause skin irritation.
Inhalation	:	May cause nose, throat, and lung irritation.
Ingestion	:	May cause abdominal discomfort.
Aggravated Medical Condition	:	None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight percent
Sodium sulfate	7757-82-6	60.00 - 100.00
Sodium Silicoaluminate	1344-00-9	1.00 - 5.00

GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT

Version *1*.0
Revision Date 09/14/2009

Print Date 09/09/2010
MSDS Number 350000003803
SITE_FORM Number
30000000000000003138.001

4. FIRST AID MEASURES

Eye contact	:	Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.
Skin contact	:	Wash off with soap and water. Get medical attention if irritation develops and persists.
Inhalation	:	Remove to fresh air. If breathing is affected, get medical attention.
Ingestion	:	Rinse mouth with water. If symptoms persist, call a physician or Poison Control Centre immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Alcohol foam, carbon dioxide, dry chemical, water fog
Further information	:	Standard procedure for chemical fires. Fight fire with normal precautions from a reasonable distance.
Flash point	:	Note: not applicable
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available

6. ACCIDENTAL RELEASE MEASURES

Methods for cleaning up	:	Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	KEEP OUT OF REACH OF CHILDREN AND PETS. Use only as directed. Avoid contact with skin, eyes and clothing.

Storage

Requirements for storage areas and containers	:	Keep container closed when not in use. Keep in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection

Industrial setting	:	Dust safety masks are recommended when the dust concentration is more than 10 mg/m3.
Household setting	:	No personal respiratory protective equipment normally required.

Hand protection

Industrial setting	:	not required under normal use
Household setting	:	not required under normal use

Eye protection

Industrial setting	:	If prolonged or repeated contact is possible: Safety glasses with side-shields
Household setting	:	No special requirements.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling. Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	powder
Color	:	white

GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT

Version *1*.0
Revision Date 09/14/2009

Print Date 09/09/2010
MSDS Number 350000003803
SITE_FORM Number
30000000000000003138.001

Odor	:	pleasant
pH	:	not applicable
Melting point	:	no data available
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	not applicable
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	no data available

10. STABILITY AND REACTIVITY

Conditions to avoid	:	None known.
Materials to avoid	:	Aluminium
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 Calculated > 5,000 mg/kg
Acute inhalation toxicity	:	LC50

GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT

Version *1*.0
Revision Date 09/14/2009

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30000000000000003138.001

		Calculated > 2 mg/l
Acute dermal toxicity	:	LD50 estimated > 2,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	no data available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number	None.
Proper shipping name	not regulated
Class:	None.

Packaging group	None.

Sea transport

- *IMDG:*

UN-Number:	None.
Packaging group:	None.
Proper shipping name	not regulated
Class:	None.

Air transport

- *ICAO/IATA:*

Class:	None.
Packaging group:	None.
Proper shipping name	not regulated
UN/ID No.:	None.

15. REGULATORY INFORMATION

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Notification status	:	All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
California Prop. 65	:	This product is not subject to the reporting requirements under California's Proposition 65.
	:	This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	0
Reactivity	0

NFPA Ratings

GLADE® TOUGH ODOR SOLUTIONS CARPET & ROOM ODOR ELIMINATOR - FRESH SCENT

Version *1*.0

Revision Date 09/14/2009

Print Date 09/09/2010

MSDS Number 350000003803
SITE_FORM Number
300000000000000003138.001

Health	1
Fire	0
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

WINDEX GLASS CLEANER (RTU)

National Fire Protection Association (NFPA)		Hazardous Material Information System (HMIS)	
	Fire Hazard: 1	Health	0
Health: 0	Reactivity: 0	Fire Hazard	1
	Specific Hazard	Reactivity	0

Protective Clothing None required.

Emergency Overview Clear Blue. Liquid. See Section 9.

Section 1. Chemical Product and Company Identification

Product Name	**WINDEX GLASS CLEANER (RTU)**	**Code**	90122 & 90135 & 90139 & 90940 & 94099
Product Use	Industrial/Institutional: Cleaning product.	**PMS#**	455934
MSDS#	126011002	**Validation Date**	4/8/2003
U.S. Headquarters Drackett Professional A Division of S.C. Johnson Commercial Markets, Inc. 8310 16th Street Sturtevant, Wisconsin 53177-0902 Phone: (888) 352-2249		**Print Date**	4/8/2003
		Supersedes	10/21/2002.
		In Case of Emergency	(800) 851-7145

Section 2. Composition and Information on Ingredients

Ingredients	CAS #	% by Weight	Exposure Limits	LC50/LD50
2-Butoxyethanol	111-76-2	0.5-1.5	**OSHA (United States).** TWA: 120 mg/m^3 **ACGIH (United States).** TWA: 97 mg/m^3	ORAL (LD50): Acute: 506 mg/kg [Rat]. DERMAL (LD50): Acute: 406 mg/kg [Rabbit]. VAPOR (LC50): Acute: 450 ppm 4 hour(s) [Rat].
Ethylene glycol hexyl ether	112-25-4	0.5-1.5	Not available.	Not available.
Isopropyl Alcohol	67-63-0	1-5	**OSHA (United States).** TWA: 980 mg/m^3 STEL: 1225 mg/m^3 **ACGIH (United States).** TWA: 983 mg/m^3 STEL: 1230 mg/m^3	ORAL (LD50): Acute: 5045 mg/kg [Rat]. DERMAL (LD50): Acute: 12800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 16000 ppm 8 hour(s) [Rat].
Water	7732-18-5	60-100	Not available.	Not available.

Section 3. Hazards Identification

Routes of Entry Inhalation. Skin contact. Eye contact.

Potential Acute Health Effects

Eyes None known.

Skin None known.

Inhalation None known.

Ingestion None known.

Medical Conditions Aggravated by Overexposure: None known.

See Toxicological Information (section 11)

Continued on Next Page

WINDEX GLASS CLEANER (RTU)

Section 4. First Aid Measures

Eye Contact	Rinse with plenty of running water.
Skin Contact	Rinse with plenty of running water.
Inhalation	No specific first aid measures are required.
Ingestion	No specific first aid measures are required.

Section 5. Fire Fighting Measures

Flammability of the Product	Although this product has a flash point below 200 Deg. F, it is an aqueous solution containing an alcohol and does not sustain combustion.
Flash Points	Closed cup: 51.1°C (124°F).
Products of Combustion	None known.
Fire Fighting Media and Instructions	Extinguish with water spray or carbon dioxide, dry chemical powder or appropriate foam. Normal fire fighting procedure may be used.
Special Remarks on Fire and Explosion Hazards	None known.

Section 6. Accidental Release Measures

Personal Precautions	Put on appropriate personal protective equipment (see Section 8.).
Environmental Precautions and Clean-up Methods	In the event of major spillage: Use appropriate containment to avoid environmental contamination. Sweep or scrape up material. Place in suitable clean, dry containers for disposal by approved methods. Use a water rinse for final clean-up.

Section 7. Handling and Storage

Handling	Avoid contact with eyes. Use appropriate hygiene measures when handling product. FOR INDUSTRIAL USE ONLY
Storage	Store in a dry, cool and well-ventilated area. Protect from freezing. KEEP OUT OF REACH OF CHILDREN.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	No special ventilation requirements. General room ventilation is adequate.
Personal Protection	
Eyes	No special requirements under normal use conditions.
Hands	No special requirements under normal use conditions.
Respiratory	No special requirements under normal use conditions.
Feet	No special requirements under normal use conditions.
Body	No special protective clothing is required.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.
Odor	Mild. Ammoniacal.
Color	Clear Blue.
pH	10.6 to 11.5 [Basic.]
Specific Gravity	1
Solubility in water	Complete.

Continued on Next Page

WINDEX GLASS CLEANER (RTU)

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	None known.
Incompatibility with Various Substances	Not available.
Hazardous Decomposition Products	When exposed to fire: Produces normal products of combustion.
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

Acute toxicity	ORAL (LD50) Estimated to be greater than 5000 mg/kg (rat).
Effects of Chronic Exposure	None known.
Other Toxic Effects	Not available.

Section 12. Ecological Information

Not available.

Section 13. Disposal Considerations

Waste Information	No special precautions. Dispose of according to all federal, state and local regulations.

Section 14. Transport Information

DOT Classification

DOT Proper Shipping Name	- Please refer to the Bill of Lading/receiving documents for up to date shipping information.

TDG Classification

TDG Proper Shipping Name	- Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory Information

Reporting in this section is based on ingredients disclosed in Section 2

US Regulations

Federal SARA 313 toxic chemical notification and release reporting: Isopropyl Alcohol
CERCLA: Hazardous substances.: Isopropyl Alcohol

State New Jersey spill list: Isopropyl Alcohol
New Jersey: Isopropyl Alcohol
Massachusetts spill list: Isopropyl Alcohol
Massachusetts RTK: Isopropyl Alcohol
Pennsylvania RTK: Isopropyl Alcohol

This product is not subject to the reporting requirements under California's Proposition 65.

Registered Product Information Not applicable.

Canadian Regulations

WHMIS Classification Not controlled under WHMIS (Canada).

WHMIS Icon

Registered Product Information Not applicable.

Chemical Inventory Status All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory

Continued on Next Page

WINDEX GLASS CLEANER (RTU)

Section 16. Other Information

Other Special Considerations	MSDS Serial Range: 2-3
Version	2.1

Notice to Reader

This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained within. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

P&G beauty

MATERIAL SAFETY DATA SHEET Finished Product.

SECTION 1 - CHEMICAL SUBSTANCE/PRODUCT AND COMPANY IDENTIFICATION

- **Finished Product Name**: Aussie Aussome Volume Aerosol Hairspray (95564909)

- **Company Identification**:
  Redmond Products, Inc.
  301 East 6th Street
  Cincinnati, OH 45202

  Contact: Consumer Relations at 1-800-947-2656

- **In case of medical emergencies, please contact your local poison control center.**
- **Transportation emergency (24 hour), contact:**
  CHEMTREC - Phone # 1-800-424-9300 (U.S. and Canada) or 1-703-527-3887 (for calls originating elsewhere).

- **DATE:** June 2009

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

This is a personal care or cosmetic product that is safe for consumers and other users under intended and reasonably foreseeable use. Additional information on toxicological endpoints is available from the supplier upon request.

POTENTIAL HEALTH EFFECTS:

- **Eye:** Contact may cause mild, transient irritation. Some redness and/or stinging may occur.

- **Skin:** Not expected to be irritating, sensitizing, photoallergenic or phototoxic when used as intended. If irritation occurs following intended use or prolonged contact it is expected to mild and transient.

- **Inhalation:** May cause mild, transient respiratory irritation. Avoid prolonged contact to concentrated vapors.

- **Ingestion:** Product used as intended is not expected to cause gastrointestinal irritation. Accidental ingestion of undiluted product may cause mild gastrointestinal irritation with nausea, vomiting, and diarrhea.

SECTION 3 - COMPOSITION AND INGREDIENTS

The complete ingredient list for the finished product(s) is as follows:

Water, Dimethyl Ether, Alcohol Denat., VA/Crotonates/Vinyl Neodecanoate Copolymer, Acrylates Copolymer, Hedychium Coronarium Root Extract, Prunus Serotina (Wild Cherry) Bark Extract, Humulus Lupulus (Hops) Extract, Humulus Lupulus (Hops) Extract, Panthenol, Aminomethyl Propanol, Fragrance, Glycereth-7 Triacetate, Ammonium Benzoate, PEG-8 Dimethicone, Cyclopentasiloxane, Cyclohexylamine, Acetamide MEA, Propylene Glycol

Hazardous ingredients as defined by OSHA, 29 CFR 1910.1200. and/or WHMIS under the HPA:

Chemical Name	Common Name	CAS No.	Composition Range	LD50/LC50
Methoxymethane	Dimethyl Ether	115-10-6	15-40%	LD50 = No data available. LC50 = 368 g/m3 (rat)
Ethanol	Alcohol Denat.	64-17-5	10-30%	LD50 (Oral) = 7,060 mg/kg (rat) LC50 = No data available.

.

SECTION 4 - FIRST AID MEASURES

- **Eye:** Thorough rinsing for 15-20 minutes of the affected eye with water is recommended. If discomfort or irritation persists, consult a physician.
- **Skin Problem:** Discontinue use of product. Apply cold compresses to affected areas to relieve any discomfort. If discomfort persists, consult a physician.
- **Inhalation:** If respiratory irritation occurs, remove individual to fresh air.
- **Ingestion:** Accidental ingestion of product may necessitate medical attention. In case of accidental ingestion dilute with fluids (water or milk) and treat symptomatically. Do not induce vomiting. Note: After first aid treatment, the caller should be advised that 1) a hospital emergency room or family physician should be consulted if anything unusual occurs or appears necessary in the judgment of the caller, & 2) that the subsequent management of the accident should be dictated by any persistent symptoms and under the direction of the physician.

SECTION 5 - FIRE FIGHTING MEASURES

- **Flash Point:** Flash point applies only to liquids and is not applicable to aerosols. See section 13 for disposal information and section 14 for transport information.
- **Extinguishing Media:** Dry chemical, foam, carbon dioxide, water.
- **Explosion Hazard:** Flammable. Container may rocket or explode in heat or fire.
- **Fire Fighting Instructions:** Contact emergency personnel. Flammable material. Explosive mixtures may form with air. Use self-contained breathing apparatus and full protective gear, if large quantities of product are involved. Hazardous decomposition products may be released. Thermal degradation may produce oxides of carbon and/or nitrogen; hydrocarbons

and/or derivatives. Thermal degradation may also produce oxides of silicone.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

- **Procedures for Spill/Leak Clean-up:**

For Household Settings: Ventilate area and eliminate all ignition sources.

For Non-Household Settings: Ventilate area and eliminate all ignition sources. Use safety goggles if splash hazards exist; use gloves and other protective clothing (apron, boots, etc.) to prevent skin contact.

SECTION 7 - HANDLING AND STORAGE

- **Precautions for Safe Handling:**

For Household Settings: Avoid heat, sparks, flame, or smoking during use. Use only in ventilated areas. Do not crush, puncture or incinerate. Avoid extreme heat and ignition sources. Avoid spraying toward open flame. Keep out of reach of children.

For Non-Household Settings: Avoid heat, sparks, flame, or smoking during use. Do not crush, puncture or incinerate. Avoid extreme heat and ignition sources. Avoid spraying toward open flame. Avoid puncturing or otherwise damaging aerosol containers and packaging when using forklifts or other material handling equipment.

- **Conditions for Safe Storage:**

For Household Settings: Pressurized container. Protect from sunlight and do not expose to temperatures above 120 ^{o}F (50^{o}C). Keep from extreme cold.

For Non-Household Settings: Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 120^{o}F (50^{o}C). Keep from extreme cold. Store in accordance with local requirements for Aerosol Level 2. Store in well ventilated, cool area. Store away from oxidizers.

Other Recommendations: None.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

For Household Settings: This is a personal care or cosmetic product that is safe for consumers and other users under normal and reasonably foreseeable use**.**

For Non-Household Settings: Use in a well ventilated area. Use safety glasses or safety goggles if airborne mist hazards exist; use gloves and other protective clothing (apron, boots etc.) to prevent skin contact. Always follow good hygienic work practices. Avoid prolonged contact with skin and clothing. This is a personal care or cosmetic product that is safe for consumers and other users under normal and reasonably foreseen use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES	
• **Color, Odor and Appearance:** Light amber to off-white colored liquid with characteristic odor.	• **Melting Point:** Not Applicable.
• **Physical State:** Liquid.	• **Boiling Point:** Not Applicable.
• **pH:** 8.50 – 9.25	• **Solubility in Water:** Concentrate: Not available • Propellant: Negligible
• **Flashpoint:** Flash point applies only to liquids and is not applicable to aerosols.	• **% VOC:** Complies with Federal and State regulations for VOC content.
• **Vapor Density:** 1.94	• **Specific Gravity:** 0.95-0.99

SECTION 10 - STABILITY AND REACTIVITY

- **Conditions to Avoid:** Avoid extreme heat and ignition sources. Store away from oxidizers.
- **Other Recommendations:** None.

SECTION 11 - TOXICOLOGICAL INFORMATION

This is a personal care or cosmetic product that is safe for consumers and other users under intended and reasonably foreseeable use. Additional information on toxicological endpoints is available from the supplier upon request.

Chronic Effects: Finished product is not expected to have chronic health effects.
Target Organs: No adverse health effects on target organs expected for finished product.
Carcinogenicity: Finished product is not expected to be carcinogenic.
NTP: No **IARC:** No **OSHA:** No

SECTION 12 - ECOLOGICAL INFORMATION

The product ingredients are expected to be safe for the environment at concentrations predicted under normal use and accidental spill scenarios. Packaging components are compatible with the conventional solid waste management practices. Additional information is available from the supplier on request.

SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal should be in accordance with Federal, State/Provincial and Local regulations.

For Household Settings: The following instructions are for consumer usage only. Empty can through normal use as instructed on the can. If the can cannot be emptied due to malfunction of the nozzle the product should be disposed of in a special waste collection for pressurized containers. A local waste handler should be contacted for additional information.

For Non-Household Settings: Products covered by this MSDS, in their original form, when disposed as waste, are ignitable hazardous waste, D001, according to Federal RCRA regulations (40 CFR 261). Disposal should be in accordance with Local, State and Federal regulations.

Aerosol cans, when disposed as waste, are regulated as D003 reactive hazardous waste in some States because of their potential to explode when heated. Check with your State environmental agency for guidance.

California Waste Code: 331

SECTION 14 - TRANSPORT INFORMATION

Finished packaged product transported by ground (DOT): Consumer Commodity, ORM-D.
Finished packaged product transported by vessel (IMDG): UN1950, Aerosol, Class 2.1, Ltd. Qty.
Finished packaged product transported by air (IATA): Consumer Commodity, ID 8000, Class 9.

SECTION 15 - ADDITIONAL REGULATORY INFORMATION

EU DPD (Dangerous Products Directive) Classification (DPD 88/379/EEC). Regulated as a Cosmetic and/or Drug by the FDA (U.S.), HPB (Canada), Cosmetics Directive (EU), MHW (Japan) and China (MOH). While this finished product(s) is not considered hazardous as defined by OSHA in 29 CFR 1900. 1200 (d), this MSDS contains valuable information critical to the safe handling and proper use of the product.

US Federal

The product described in this Material Safety Data Sheet is regulated under the Federal Food, Drug, and Cosmetics Act and is safe to use as per directions on container, box or accompanying literature (where applicable).

CERCLA reportable quantity (RQ):

Ingredient	CAS #	Level	RQ
RCRA Hazardous Waste No. D001/Unlisted Hazardous Wastes Characteristic of Ignitability (Dimethyl Ether)	115-10-6	15-45%	100 lbs.
RCRA Hazardous Waste No. D001/Unlisted Hazardous Wastes Characteristic of Ignitability (Alcohol Denat.)	64-17-5	10-30%	100 lbs.
Ammonium Benzoate	1863-63-4	0.1-1%	5000 lbs.
RCRA Hazardous Waste No. D001/Unlisted Hazardous Wastes Characteristic of Ignitability (Cyclohexylamine)	108-91-8	<0.5%	100 lbs.

SARA 313/302/304/311/312 chemicals:

Ingredient	CAS #	Level	313	302	304	311	312
Ammonia (Ammonium Benzoate)	1863-63-4	0.1-1%	Yes	No	No	No	No
Cyclohexylamine	108-91-8	<0.5%	Yes	Yes	No	No	No

Canada

All ingredients are CEPA approved for import to Canada. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the CPR.

US States

CA Prop 65:

This product is not subject to warning labeling under California Proposition 65.

State Right-to-Know:

The following ingredients are present in the finished product and are listed on the following state right-to-know lists:

Ingredient	CAS #	Level	State				
Dimethyl Ether	115-10-6	15-40%	IL	MA	NJ	PA	RI
Alcohol Denat.	64-175-5	10-30%	IL	MA	NJ	PA	RI
Aminomethyl Propanol	124-68-5	0.1-1%		MA		PA	
Ammonium Benzoate	1863-63-4	0.1-1%	IL	MA	NJ	PA	
Cyclohexylamine	108-91-8	<0.5%	IL	MA	NJ	PA	RI
Propylene Glycol	57-55-6	<0.5%		MA		PA	

Other

Perfumes contained within the products covered by this MSDS comply with appropriate IFRA guidance.

SECTION 16 - OTHER INFORMATION

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. Procter & Gamble assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.

Spectrum Group
Division of United Industries Corp.
P.O. Box 142642
St. Louis, MO 63114-0642

Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

Hazardous Material Identification System - (HMIS)	
HEALTH - 1	REACTIVITY - 0
FLAMMABILITY - 2	PERSONAL - Rubber gloves

I Trade Name: Hot Shot® Flying Insect Killer

Product Type: Aerosol Insecticide

Product Item Number: 5415.6 **Formula Code Number:** 21-0601

EPA Registration Number	Manufacturer	Emergency Telephone No.
46515-48-8845	Chemsico 8494 Chapin Industrial Dr. St. Louis, MO 63114	**For Chemical Emergency:** 1-800-633-2873 **For Information:** 1-800-332-5553 **Prepared by:** C.A. Duckworth **Date Prepared:** October 28, 2004

II Hazardous Ingredients/Identity Information

Chemical	%	OSHA PEL	ACGIH TLV
Mineral Spirits CAS #8012-95-1	4.0	100 ppm	100 ppm
d-trans Allethrin CAS #28434-00-6	0.25	NA	NA
Permethrin CAS #52645-53-1	0.15	NA	NA
Hydrocarbon propellant blend CAS #75-28-5/106-97-8/74-98-6	18.0	NE	NE

III Physical and Chemical Characteristics

Appearance and Odor: Solid fan mist. No significant residue. Fragrance and pyrethroid odor.
Boiling Point: NA
Melting Point: NA
Vapor Pressure: 120 psig @ 54°C/130°F
Specific Gravity: 0.97 (H_20=1)
Vapor Density: greater than 1 (Air=1)
% Volatile (by vol.): 99%
Solubility in Water: greater than 65%
Evaporation Rate: less than 1 (Butyl Acetate=1)

IV Fire and Explosion Hazard Data

Flame Extension: 0" (Level 1 Aerosol)
Flammable Limits: N/A
Autoignition Temp.: N/A
Fire Extinguishing Media: Water Fog, Carbon Dioxide, Dry Chemical
Decomposition Temp.: N/A
Special Fire-Fighting Procedures: Keep containers cool. Use equipment or shielding required protecting personnel against bursting, rupturing or venting containers.
Unusual Fire and Explosion Hazards: At elevated temperatures (over 54°C/130°F), containers may vent, rupture or burst. Also see Section V.

V Reactivity Data

Stability: Stable
Polymerization: Will not occur
Conditions to Avoid: Temperatures over 130°F
Incompatible Materials: N/A
Hazardous Decomposition or Byproducts: Carbon dioxide, carbon monoxide

VI Health Hazard Data

Ingestion (Swallowing): Avoid contamination of feed or foodstuffs. **First Aid:** Call physician or Poison Control Center immediately.
Skin Contact: Harmful if absorbed through skin. **First Aid:** Wash with plenty of soap and warm water. Get medical attention if irritation persists.
Eye Contact: Avoid contact with eyes. **First Aid:** Flush with plenty of water. Get medical attention if irritation persists.
Special Notes: None
Health Conditions Aggravated by Exposure: None Known
Ingredients listed by NTP, OSHA or IARC as Carcinogens or potential carcinogens: None

VII Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled: Avoid breathing vapors. Remove ignition sources. Avoid skin contact with liquid.
Waste Disposal: Do not puncture or incinerate containers. Give empty, leaking or full containers to a facility qualified to dispose of pressurized containers.
Handling & Storage Precautions: Do not store where temperatures can exceed 54°C/130°F.

VIII Control Measures

Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.

IX Transportation Data

DOT: Consumer Commodity, Hazard Class ORM-D (Limited Quantity Exception)

IMDG: Aerosols (Maximum 1 Liter), Hazard Class 2, UN-1950, Packing Group III

IATA: Aerosols, Flammable, Containing Substances in Division 6.1, Packing Group III (Each Not Exceeding 1 Liter Capacity), Hazard Class 2.1, UN-1950, Packing Group III

particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.

MATERIAL SAFETY DATA SHEET

0500
01 00

Section 1 -- PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER

0500

HMIS CODES

Health	2
Flammability	4
Reactivity	0

PRODUCT NAME

KRYLON* Triple-Thick Crystal Clear Glaze

MANUFACTURER'S NAME

THE SHERWIN-WILLIAMS COMPANY
KRYLON Products Group
Cleveland, OH 44115

EMERGENCY TELEPHONE NO.

(216) 566-2917

DATE OF PREPARATION

03-JUN-03

INFORMATION TELEPHONE NO.

(800) 832-2541

Section 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

% by WT	CAS No.	INGREDIENT			UNITS	VAPOR PRESSURE
14	74-98-6	Propane				
			ACGIH TLV	2500	ppm	760 mm
			OSHA PEL	1000	ppm	
13	106-97-8	Butane				
			ACGIH TLV	800	ppm	760 mm
			OSHA PEL	800	ppm	
31	108-88-3	Toluene				
			ACGIH TLV	50	ppm (skin)	22 mm
			OSHA PEL	100	ppm (skin)	
			OSHA PEL	150	ppm (skin) STEL	
25	67-64-1	Acetone				
			ACGIH TLV	500	ppm	180 mm
			ACGIH TLV	750	ppm STEL	
			OSHA PEL	1000	ppm	

Section 3 -- HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.
EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

Irritation of eyes, skin and upper respiratory system.
May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

Continued on page 2

Section 4 -- FIRST AID MEASURES

If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.
If on SKIN: Wash affected area thoroughly with soap and water. Remove contaminated clothing and launder before re-use.
If in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If SWALLOWED: Do not induce vomiting. Get medical attention immediately.

Section 5 -- FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
Propellant < 0 F	1.0	12.8

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section 6 -- ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

Section 7 -- HANDLING AND STORAGE

STORAGE CATEGORY

Not Available

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

Continued on page 3

Section 8 -- EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction).

Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

Section 9 -- PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	6.28 lb/gal 752 g/l
SPECIFIC GRAVITY	0.76
BOILING POINT	<0 - 238 F <-18 - 114 C
MELTING POINT	Not Available
VOLATILE VOLUME	89 %
EVAPORATION RATE	Faster than ether
VAPOR DENSITY	Heavier than air
SOLUBILITY IN WATER	N.A.
pH	7.0
VOLATILE ORGANIC COMPOUNDS	(VOC Theoretical)
Volatile Weight 57.97 %	Less Water and Federally Exempt Solvents

Continued on page 4

Section 10 -- STABILITY AND REACTIVITY

STABILITY -- Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

Section 11 -- TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, cardiovascular and reproductive systems.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

TOXICOLOGY DATA

CAS No.	Ingredient Name					
74-98-6	Propane					
		LC50	RAT	4HR	Not Available	
		LD50	RAT		Not Available	
106-97-8	Butane					
		LC50	RAT	4HR	Not Available	
		LD50	RAT		Not Available	
108-88-3	Toluene					
		LC50	RAT	4HR	4000	ppm
		LD50	RAT		5000	mg/kg
67-64-1	Acetone					
		LC50	RAT	4HR	Not Available	
		LD50	RAT		5800	mg/kg

Section 12 -- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No data available.

Section 13 -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

Continued on page 5

Section 14 -- TRANSPORT INFORMATION

No data available.

Section 15 -- REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
108-88-3	Toluene	31	

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

Section 16 -- OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

Material Safety Data Sheet

Name : **LA's Totally Awesome All Purpose Cleaner & Degreasers & Spot Remover**

Date Issued : 9/20/04

US MANUFACTURER:
Awesome Products Inc.
Phone 1-800-482-2875
6370 Altura Blvd., Buena Park, CA 90620
Emergency Phone : 714-562-8873

Hazard Rating	HMIS	Hazard	NFPA
4 - Very High	1	Health	1
3 - High	0	Flammability	0
2 - Moderate	0	Reactivity	0
1 - Slight		Special	
0 - Insignificant			

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME
All Purpose Cleaner & Degreaser

REASON FOR CHANGE
Formulation Revised.

PRODUCT USE
Home care cleaning product

PRODUCT DESCRIPTION
16 Oz Awesome All Purpose Cleaner and Degreasers & Spot Remover
20 Oz Awesome All Purpose Cleaner and Degreasers & Spot Remover
24 Oz Awesome All Purpose Cleaner and Degreasers & Spot Remover
32 Oz Awesome All Purpose Cleaner and Degreasers & Spot Remover
64 Oz Awesome All Purpose Cleaner and Degreaser & Spot Remover

SECTION 2 - INGREDIENT INFORMATION

Weight %	Ingredient & Exposure Limit
0.01 to 2.5	Orange Oil Blend (CAS# 8008-57-9) & (CAS#111-76-2))
0.5 to 4.0	Ethoxylated Alcohol (CAS# 9036 19 5)
0.5 to 2.0	Disodium Salt (CAS# 6834-92-0)
0.5 to 2.0	Phosphate Sodium (CAS# 7601 54 9)
0.5 to 0.8	Hydroxy Sodium (CAS# 1310-73-2)
88 to 98	Water (CAS# 7732-18-5)

SECTION 3 - HEALTH HAZARDS IDENTIFICATION (Also see Section 11)

ROUTE(S) OF ENTRY
Effects of Acute Exposure

Eye
May Cause : Mild eye irritation.

Skin
Prolonged or repeated contact may cause : irritation

Inhalation
None Known

Ingestion
None Known.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE
None Known.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT
Flush immediately with plenty of water for at least 15 to 20 minutes.
If irritation persists, get medical attention.

SKIN CONTACT
Rinse with plenty of water

INHALATION
No special requirements.

INGESTION
Immediately drink 1-2 glasses of water or milk. Seek immediate medical attention.

SECTION - 5 - FIRE AND EXPLOSION INFORMATION

FLASH POINT
Not Applicable
FLAMMABLE LIMITS
Not applicable.

AUTOIGNITION TEMPERATURE
Not applicable.

EXTINGUISHING MEDIA
Foam. CO_2. Dry chemical. Water Fog.

SPECIAL FIREFIGHTING PROCEDURES
Normal fire fighting procedures may be used.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Container may melt and leak in heat of fire

SECTION 6 - PREVENTATIVE RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Dike large spills. Absorb with oil-dri or similar inert material
Sweep or scrape up and containerize

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONARY INFORMATION
May be : Eye irritant. Avoid contact with eyes. If such contact occurs, flush immediately with plenty of water for at least 15 to 20 minutes.
If irritation persists, seek medical aid. Keep out of reach of children.

Name : **LA's Totally Awesome All Purpose Cleaner & Degreasers & Spot Remover**

Date Issued : 9/20/04

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION
No special requirements under normal use conditions.

VENTILATION
No special requirements.

PROTECTIVE GLOVES
No special requirements under normal use conditions.

EYE PROTECTION
No special requirements under normal use conditions.

OTHER PROTECTIVE MEASURES
No special requirements.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

COLOR
Varies

PRODUCT STATE
Liquid

ODOR
Orange

pH Range
12 - 13

ODOR THRESHOLD
Not available.

SOLUBILITY IN WATER
Complete

SPECIFIC GRAVITY (H_2O = 1)
1.00

VAPOR DENSITY (AIR = 1)
Not Available

EVAPORATION RATE (BUTYL ACETATE = 1)
Not available

VAPOR PRESSURE (mm HG)
Not Available.

BOILING POINT
212 °F (100 °C)

FREEZING POINT
- 32 °F (0 °C)

Name : **LA's Totally Awesome All Purpose Cleaner & Degreasers & Spot Remover**

Date Issued : 9/20/04

COEFFICIENT OF WATER / OIL
Not available.

VOLATILE ORGANIC COMPOUNDS(VOCs)
< 2%

SECTION 10 - STABILITY AND REACTIVITY

STABILITY
Stable

STABILITY - CONDITIONS TO AVOID
Not applicable

INCOMPATIBILITY
None known.

HAZARDOUS POLYMERIZATION
Will not occur.

HAZARDOUS POLYMERIZATION - CONDITIONS TO AVOID
Not applicable

SECTION 11 - TOXICOLOGY INFORMATION (Also see Section 3)

LD50 (ACUTE ORAL TOX)
Not available.

LD 50 (ACUTE DERMAL TOX)
Not available.

LD50 (ACUTE INHALATION TOX)
Not available.

EFFECTS OF CHRONIC EXPOSURE
None known.

CARCINOGENICITY
None known.

REPRODUCTIVE TOXICITY
None known.

TERATOGENICITY
None known.

MUTAGENICITY
None known.

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA
Contains readily degradable surfactants.

Name : **LA's Totally Awesome All Purpose Cleaner & Degreasers & Spot Remover**

Date Issued : 9/20/04

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION
Waste from normal product use may be sewered to a publicly-owned treatment works (POTW) in compliance with applicable Federal / Provincial / State / Local / Municipal pretreatment requirements.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT INFORMATION
Not applicable.

CANADIAN SHIPPING NAME

TDG CLASSIFICATION
Non-regulated.

PIN/NIP
Not applicable

PACKING GROUP
Not applicable.

EXEMPTION NAME
Not applicable.

SECTION 15 -REGULATORY INFORMATION

WHIMS CLASSIFICATION
Not applicable

All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances control Act (TSCA) Chemical Substance Inventory.
All ingredients in this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
This product is not subject to the reporting requirements under the California's Proposition 65.

SECTION 16 - OTHER INFORMATION

ADDITIONAL INFORMATION
Use as directed.

EPA REGISTRATION #
Not applicable.

PREPARATION INFORMATION -
PREPARED BY
Manufacturer's Technical Support Department. Refer to page 1 (Manufacturer) for contact information.

This document has been prepared using data from sources considered technically reliable. It does not constitute a warranty, express or implied, as to the accuracy of the information contained herein. Actual conditions of use and handling are beyond seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.
PRINT DATE : September 23, 2004

AD-A5000

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U. S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved OMB No. 1218-0072

IDENTITY (As Used on Label and List)	NOTE: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
Maintenance Pro Cleanser	

SECTION I

Manufacturer's Name ***Fitzpatrick Bros., Inc.***	Emergency Telephone Number ***(262) 947-3500 X 617***
Address (Number, Street, City, State and ZIP Code)	Telephone Number for Information ***(262) 947-3500 X 617***
625 North Sacramento Boulevard	Date Prepared ***8/8/2003***
Chicago, Illinois 60612	Signature of Preparer (optional)

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components (Specify Chemical Identity: Common Name[s]) OSHA PEL ACGIH TLV Other Limits Recommended % (optional)	
THIS PRODUCT CONTAINS:	***Calcium Carbonate (CAS# 1317-65-3)***
	Sodium Carbonate (CAS# 497-19-8)
	Sodium Dodecylbenzene Sulfonate (CAS# 25155-30-0
These basic materials have been identified as eye, skin, mucous membrane irritants.	

SECTION III - Physical/Chemical Characteristics

Boiling Point	***N/A***	Specific Gravity (H2O = 1)	***N/A***
Vapor Pressure (mm Hg.)	***N/A***	Melting Point	***N/A***
Vapor Density (AIR = 1)	***N/A***	Evaporation Rate (Butyl Acetate = 1)	***N/A***
Solubility in Water ***Partially soluble in water***			
Appearance and Odor ***White powder, some odor***			

SECTION IV - Fire and Explosion Hazard Data

Flash Point (Method Used) ***N/A***	Flammable Limits ***N/A***	LEL ***N/A***	UEL ***N/A***
Extinguishing Media ***Not a fire or explosive hazard***			
Special Fire Fighting Procedures ***None***			
Unusual Fire and Explosion Hazards ***None***			

Commercial Products Group
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

HMIS®
Health 1
Flammability 0
Reactivity 0

MATERIAL SAFETY DATA SHEET

Issue Date: 2/99

SECTION I

Emergency Telephone Number: Procter & Gamble Operator 1-513-983-1100
Identity: **MR. CLEAN All-Purpose Cleaner**
Ingredients/Chemical Name: Cleaning agents (nonionic and anionic surfactants), quality control agents, perfume, colorant and water.
Other: N.A.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Ingredients as defined by OSHA, 29 CFR 1910. 1200.

Chemical Name	Common Name	CAS No.	ACGIH TLV	OSHA PEL	Other Limits Recommended
alcohol ethoxylates	nonionic surfactant		see Section V - Health and Safety Data		

DOT Classification: Not regulated

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling point: N.A.
Vapor Pressure (mm Hg): N.A.
Vapor Density (Air=1): N.A.
Solubility in Water: Complete
pH: 9.0 10.0
Specific Gravity (H_2O=1): 1.048 g/cc
Percent Volatile by Volume (%): N.A.
Evaporation Rate (nBuOAc=1): N.A.
Appearance and Odor: Clear yellow liquid with lemon fragrance

SECTION IV - FLAMMABILITY AND REACTIVITY

Flash Point (Method Used): over 200°F (cc)
Explosive Limits: *LEL*: N.A. *UEL*: N.A.
Extinguishing Media: Use CO_2, water, dry chemical or "alcohol" foam.
Special Fire Fighting Procedures: Use water to keep fire exposed containers cool.
Unusual Fire Hazards: None Known
Stability *Unstable*: *Conditions to Avoid*: None Known
Stable: X
Incompatibility (Materials to avoid): None Known
Hazardous Decomposition/By Products: None Known
Hazardous Polymerization *May Occur*: *Conditions to Avoid*: None
Will Not Occur: X

SECTION V - HEALTH AND SAFETY DATA

Route(s) of Entry: Skin contact, eye contact, ingestion and inhalation.
Health Hazards (Acute and Chronic): Mild skin and eye irritant. May be harmful if swallowed.
Signs and Symptoms of Exposure: Instillation into the eyes may result in transient superficial effects similar to those produced by mild toilet soaps and detergents. Ingestion may result in transient nervous system effects (ataxia and muscle weakness) and/or gastrointestinal irritation with nausea, vomiting or diarrhea. This product contains alcohol ethoxylates. Large ingestions (>2ml/kg) may also cause symptoms of alcohol-like intoxications, incoordination, drowsiness, inarticulateness or ataxia. Alcohol ethoxylates may contribute to Central Nervous System symptoms.
Medical Conditions Generally Aggravated by Exposure: Use on irritated or extremely dry skin may aggravate the existing conditions.
Emergency and First Aid Procedures: ***Eye Contact***: Flush thoroughly with water. ***Ingestion***: Dilute with fluids and call a physician. ***Skin Irritation***: Rinse exposed area and discontinue use. Remove contaminated clothing.
Other: N.A.

SECTION VI - PRECAUTIONS FOR SAFE HANDLING AND USE

Precautions to be Taken in Handling and Storing: Store in a cool, dry, well ventilated area.
Other precautions: None required
Steps to Be Taken in Case Material is Released or Spilled: Use water spray to dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.
Waste Disposal Method: Do not landfill. Small (household) quantities may be disposed of via sewer. Incineration is preferred where permitted by federal, state and local regulations. Disposal is to be performed in compliance with all regulations.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): None required.

Ventilation	*Local Exhaust*: None required	*Special*: None
	Mechanical (General): Acceptable	*Other*: None
Eye Protection: None required with normal use. If splash is possible use goggles.		**Protective Gloves**: None required with normal use.

Other Protective Equipment: None required; in industrial setting eye wash fountain desirable.

*N.A. - Not Applicable *N.K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

Material Safety Data Sheet

Manufacturer: **Thornell Corporation**, P.O. Box 363, 100 James Street, Smithville, MO 64089 **Emergency Phone:** 816-873-3342

SECTION I - IDENTIFICATION

Product Name(s): *Animal Odor Eliminator, All Purpose Deodorizing Wipes, Kennel Odor Eliminator, Cat Odor-Off, Cat Odor-Off Concentrate, Dog Odor-Off, Ferret Odor-Off, Skunk-Off, Skunk-Off Shampoo*

SECTION II - HAZARDOUS INGREDIENTS

Conforms to the RIFM and IFRA guidelines. Not a primary skin irritant, nor toxic by oral ingestion or by inhalation. A minor irritant when in direct contact with the eyes. Contains Isopropyl Alcohol - CAS #67-63-0, less than 0.2%

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: N/A
Specific Gravity (H_20=1):

All Purpose Deodorizing Wipes: @25°C .9950

Animal Odor Eliminator: @25°C .9950
Kennel Odor Eliminator: @25°C .8710-.8755
Cat Odor-Off: @25°C .9973-.9974
Cat Odor-Off Concentrate: @25°C .9973-.9974
Dog Odor-Off: @25°C .994-1.002
Ferret Odor-Off: @25°C .9973-.9974
Skunk-Off: @25°C .9990-.9996
Skunk-Off Shampoo: @25°C .9990-1.0

Vapor Pressure (mm Hg): N/A
Melting Point: N/A
Vapor Density (AIR=1): N/A
Evaporation Rate (BuAC=1): N/A
Solubility In Water: Completely Soluble

Appearance and Odor:

All Purpose Deodorizing Wipes: @25°C .9950: White moistened towellete
Animal Odor Eliminator: Light yellow to amber
Kennel Odor Eliminator: Clear to light yellow
Cat Odor-Off: Clear to light yellow

Cat Odor-Off Concentrate: Clear to light yellow
Dog Odor-Off: Water white. Cedar fragrance
Ferret Odor-Off: Clear to light yellow
Skunk-Off: Clear to light yellow
Skunk-Off Shampoo: Light yellow

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used):

All Purpose Deodorizing Wipes*:* 135^{o}F TCC
Animal Odor Eliminator: 135^{o}F TCC
Kennel Odor Eliminator: 105^{o}F TCC
Cat Odor-Off: over 230^{o}F TCC
Cat Odor-Off Concentrate: over 230^{o}F TCC
Dog Odor-Off: 204^{o}F TCC
Ferret Odor-Off: over 230^{o}F TCC
Skunk-Off: 188^{o}F TCC
Skunk-Off Shampoo: over 200^{o}F TCC

Extinguishing Media: Carbon Dioxide or other oil combatant types
Special Fire Fighting Procedures: As above
Unusual Fire and Explosion Hazards: None

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid: Exposure to heat and open flame.
Hazardous Polymerization: Will not occur

SECTION VI - HEALTH HAZARD DATA

Health Hazards (Acute and Chronic): No acute and/or chronic health hazards. No significant adverse reactions have been reported. Liquid in eyes may cause limited, temporary irritation.
Carcinogenicity: None
Signs and Symptoms of Exposure: Minor irritation to eyes, nose and throat.
Medical Conditions Generally Aggravated by Exposure: None
Emergency and First Aid Procedures: If inhaled remove to fresh air. If eye contact, flush with water. Skin contact, wash with soap and water. If ingested give copious amounts of water. Contact a physician if irritation persists.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken In Case Material is Released or Spilled: Use floor desiccant.
Waste Disposal Method: Per local statute for combustibles.
Precautions to be Taken in Handling and Storing: Avoid open flame.
Other Precautions: None

SECTION VIII - CONTROL MEASURES

Respiratory Protection: Not usually required.
Ventilation: Local exhaust - Not required; Mechanical (General) - Fan or blowers when required.
Protective Gloves: None
Eye Protection: None
Other Protective Clothing or Equipment: None

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2

Revision Date 11/13/2009

Print Date 11/23/2009

MSDS Number 350000004807
SITE_FORM Number
30000000000000004116.002

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	OFF!® DEEP WOODS® INSECT REPELLENT V
Use of the Substance/Mixture	:	Insect Repellent
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	clear / aerosol / characteristic
Immediate Concerns	:	Caution CAUSES EYE IRRITATION. FLAMMABLE: Contents under pressure. Do not puncture or incinerate. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst. May be harmful if swallowed. Avoid contact with eyes and lips.

Potential Health Effects

Exposure routes	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	May cause: Moderate eye irritation
Skin	:	May cause skin reactions in rare cases.
Inhalation	:	Inhalation may cause central nervous system effects.
Ingestion	:	May be harmful if swallowed. May cause irritation to mouth, throat and stomach. Causes headache, drowsiness or other effects to the central nervous system.
Aggravated Medical Condition	:	None known.

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight percent
Ethyl alcohol	64-17-5	30.00 - 60.00
N,N-Diethyl-m-toluamide	134-62-3	25.00
Water	7732-18-5	7.00 - 13.00
Butane	106-97-8	1.00 - 5.00
Propane	74-98-6	1.00 - 5.00
Isobutane	75-28-5	1.00 - 5.00

4. FIRST AID MEASURES

Eye contact : Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.

Skin contact : Wash off with soap and water. Get medical attention if irritation develops and persists.

Inhalation : If breathing is affected, get medical attention. Remove to fresh air.

Ingestion : Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Alcohol foam, carbon dioxide, dry chemical, water fog

Specific hazards during fire fighting : Aerosol Product - Containers may rocket or explode in heat of fire.

Further information : Wear full protective clothing and positive pressure self-contained breathing apparatus. Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers.

Flash point : < 20 °F
Method: Tag Closed Cup (TCC)
Note: Propellant

Lower explosion limit : Note: no data available

OFF!® DEEP WOODS® INSECT REPELLENT V

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Upper explosion limit	:	Note: no data available
NFPA Classification	:	NFPA Level 2 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition.
Environmental precautions	:	Use appropriate containment to avoid environmental contamination.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Dike large spills.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	Use only as directed. KEEP OUT OF REACH OF CHILDREN AND PETS. Avoid contact with eyes and lips. Do not puncture or incinerate.
Advice on protection against fire and explosion	:	Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers	:	Keep in a dry, cool and well-ventilated place. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Ethyl alcohol	64-17-5	-	1,000 ppm	ACGIH TWA
Ethyl alcohol	64-17-5	1,900 mg/m3	1,000 ppm	OSHA TWA
Butane	106-97-8	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	1,800 mg/m3	1,000 ppm	OSHA TWA
Isobutane	75-28-5	-	1,000 ppm	ACGIH TWA

Personal protective equipment

Respiratory protection

Industrial setting : Do not spray in enclosed areas.
No personal respiratory protective equipment normally required.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : For prolonged or repeated contact use protective gloves.

Household setting : not required under normal use

Eye protection

Industrial setting : If prolonged or repeated contact is possible:
Safety glasses with side-shields

Household setting : No special requirements.

Hygiene measures : Use only with adequate ventilation. Wash thoroughly after handling. Wear suitable protective clothing.

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
Revision Date 11/13/2009

Print Date 11/23/2009
MSDS Number 350000004807
SITE_FORM Number
30000000000000004116.002

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	aerosol
Color	:	clear
Odor	:	characteristic
pH	:	not applicable
Boiling point	:	no data available
Freezing point	:	not applicable
Flash point	:	< 20 °F Method: Tag Closed Cup (TCC) Propellant
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Density	:	0.84 g/cm3
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	no data available

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	Do not mix with oxidizing agents.
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
Revision Date 11/13/2009

Print Date 11/23/2009
MSDS Number 350000004807
SITE_FORM Number
30000000000000004116.002

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	3,735 mg/kg
Acute inhalation toxicity	:	> 2.18 mg/l
Acute dermal toxicity	:	> 2,000 mg/kg

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	Not known to be a sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	no data available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.
Household setting	:	Consumer may discard empty container in trash, or recycle where facilities exist.
RCRA waste class	:	D001 (Ignitable Waste)
SCJ product category	:	AF: Aerosol Flammable

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
Revision Date 11/13/2009

Print Date 11/23/2009
MSDS Number 350000004807
SITE_FORM Number
30000000000000004116.002

14. TRANSPORT INFORMATION

Land transport

U.S. DOT and Canadian TDG Surface Transportation:

UN-Number	1950
Proper shipping name	Aerosols, flammable
Class:	2.1
Packaging group:	None.
Note:	SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

IMDG:

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, flammable
UN-Number:	1950
Note:	SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

ICAO/IATA:

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, flammable
UN/ID No.:	UN 1950
Note:	SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Notification status	:	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Notification status	:	All ingredients of this product comply with the New Substances

OFF!® DEEP WOODS® INSECT REPELLENT V

Version *1*.2
Revision Date 11/13/2009

Print Date 11/23/2009
MSDS Number 350000004807
SITE_FORM Number
30000000000000004116.002

Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.

: This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Registration # / Agency
4822-167/EPA

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	4
Reactivity	0

NFPA Ratings

Health	2
Fire	4
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*

Print Date 06/02/2009

Revision Date 05/26/2009

MSDS Number 350000003639

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name	:	PLEDGE® CLEAN & DUST FURNITURE POLISH
Use of the Substance/Preparation	:	Furniture Polish/Cleaner
Company	:	S.C. Johnson & Son, Inc. 1525 Howe Street Racine WI 53403-2236
Emergency telephone	:	24 Hour Transport & Medical Emergency Phone (866) 231-5406 24 Hour International Emergency Phone (952) 852-4647

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor	:	white / aerosol / pleasant
Immediate Concerns	:	Caution CONTENTS UNDER PRESSURE. Do not puncture or incinerate. Keep away from heat, sparks and flame. Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

Potential Health Effects

Routes of exposure	:	Eye, Skin, Inhalation, Ingestion.
Eyes	:	No adverse effects expected when used as directed.
Skin	:	No adverse effects expected when used as directed.
Inhalation	:	No adverse effects expected when used as directed.
Ingestion	:	No adverse effects expected when used as directed.
Aggravated Medical Condition	:	None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Weight %
Water	7732-18-5	60.00 - 100.00
Naphtha, petroleum, light alkylate	64741-66-8	5.00 - 10.00
Dimethicone	63148-62-9	5.00 - 10.00
Butane	106-97-8	1.00 - 5.00

Isobutane	75-28-5	1.00 - 5.00
Propane	74-98-6	1.00 - 5.00

4. FIRST AID MEASURES

Eye contact	:	Rinse with plenty of water.
Skin contact	:	Wash off with soap and water.
Inhalation	:	Remove to fresh air. If breathing is affected, get medical attention.
Ingestion	:	If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician or Poison Control Centre immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Alcohol foam, carbon dioxide, dry chemical, water fog,
Specific hazards during fire fighting	:	Aerosol Product - Containers may rocket or explode in heat of fire.
Further information	:	Cool and use caution when approaching or handling fire-exposed containers. Fight fire from maximum distance or protected area. Wear full protective clothing and positive pressure self-contained breathing apparatus.
Flash point	:	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	:	< -7 °C Method: Tag Closed Cup (TCC)
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
NFPA Classification	:	NFPA Level 1 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Remove all sources of ignition.
Methods for cleaning up	:	Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : Use only as directed.
KEEP OUT OF REACH OF CHILDREN AND PETS.
Do not puncture or incinerate.
Do not spray or use on floors as it could leave them slippery.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Storage

Requirements for storage areas and containers : Keep in a dry, cool and well-ventilated place.
Do not freeze.
Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Basis
Butane	106-97-8	-	1,000 ppm	ACGIH TWA
Isobutane	75-28-5	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	-	1,000 ppm	ACGIH TWA
Propane	74-98-6	1,800 mg/m3	1,000 ppm	OSHA TWA

Personal protective equipment

Respiratory protection

Industrial setting : No personal respiratory protective equipment normally required.

Household setting : No personal respiratory protective equipment normally required.

Hand protection

Industrial setting : not required under normal use

Household setting	:	not required under normal use

Eye protection

Industrial setting	:	No special requirements.
Household setting	:	No special requirements.
Hygiene measures	:	Use only with adequate ventilation. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	aerosol
Color	:	white
Odor	:	pleasant
pH	:	not applicable
Melting point	:	no data available
Boiling point	:	no data available
Freezing point	:	no data available
Flash point	:	< 20 °F Method: Tag Closed Cup (TCC)
Flash point	:	< -7 °C Method: Tag Closed Cup (TCC)
Evaporation rate	:	no data available
Autoignition temperature	:	no data available
Lower explosion limit	:	no data available
Upper explosion limit	:	no data available
Vapour pressure	:	no data available
Water solubility	:	dispersible
Partition coefficient: n-octanol/water	:	no data available
Specific Gravity	:	0.91 - 0.92

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*
Print Date 06/02/2009
Revision Date 05/26/2009
MSDS Number 350000003639

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	None.
Hazardous decomposition products	:	When exposed to fire, produces normal products of combustion.
Hazardous reactions	:	Stable

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 Dose: estimated > 20,000 mg/kg
Acute inhalation toxicity	:	LC50 rat Dose: > 208 mg/l
Acute dermal toxicity	:	no data available

Chronic effects

Carcinogenicity	:	no data available
Mutagenicity	:	no data available
Reproductive effects	:	no data available
Teratogenicity	:	no data available
Sensitisation	:	no data available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects	:	Not Available

13. DISPOSAL CONSIDERATIONS

Industrial setting	:	Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

Household setting : Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

- **U.S. DOT and Canadian TDG Surface Transportation:**

UN-Number	1950
Proper shipping name	Aerosols, Flammable
Class:	2.1
Packaging group:	None.
Note:	SC Johnson ships this product as Consumer Commodity ORM-D (non-bulk packages)

Sea transport

- *IMDG:*

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, Flammable
UN-Number:	1950
Note:	SC Johnson ships this product as "Limited Quantity" when the container quantity value is 1 Liter or less.

Air transport

- *ICAO/IATA:*

Class:	2.1
Packaging group:	None.
Proper shipping name	Aerosols, Flammable
UN/ID No.:	UN 1950
Note:	SC Johnson typically does not ship products via air, therefore it has not been determined if the product container meets current IATA/ICAO package criteria. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

15. REGULATORY INFORMATION

Global Chemical Inventories

Notification status : All ingredients of this product are listed or are excluded from

listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

: All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.

: This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	1
Flammability	4
Reactivity	0

NFPA Ratings

Health	1
Fire	4
Reactivity	0
Special	

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

PLEDGE® CLEAN & DUST FURNITURE POLISH

Version *1.*

Print Date 06/02/2009

Revision Date 05/26/2009

MSDS Number 350000003639

Prepared by:	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)

Material Safety Data Sheet

POWERHOUSE™

All-Purpose Cleaner

Product Number: 50154U

CERTOL® INTERNATIONAL, LLC
6120 E. 58th Avenue
Commerce City, CO 80022
Ph: (303) 799-9401
Toll Free: 1-800-843-3343
Fax: (303) 799-9408
24-Hour Emergency Telephone
INFOTRAC: 1-800-535-5053
www.certol.com

ISSUE DATE: August 2008 (Supersedes: December 2005)

Certol International, LLC urges each recipient of the MSDS to read it carefully to understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology and fire prevention, as needed to understand the data in the MSDS.

To promote safe handling, each recipient of the MSDS should: (1) notify anyone using the material of the MSDS information regarding hazards or safety; (2) furnish the MSDS information to customers purchasing the product; and (3) request the customers furnish MSDS information to all users.

Emergency and First Aid Procedures

Swallowing: Rinse mouth and throat thoroughly with water. Drink large amounts of water. DO NOT induce vomiting. Do not give anything by mouth to an unconscious or convulsing person. Seek medical attention immediately.

Skin Contact: Wash skin with flowing water or shower. If irritation persists, seek medical attention.

Inhalation: Remove the affected victim from exposure. Administer artificial respiration if breathing stopped. Seek medical attention immediately.

Eye Contact: Flush eyes with water for 15 minutes. If irritation persists, seek medical attention.

1. Identification

Product Name: POWERHOUSE™ All-Purpose Cleaner
Chemical Name: Blend

2. Hazards

PRINCIPAL HAZARDOUS COMPONENTS	CAS #
STPP	7758-29-4

3. Physical Data

Appearance: Clear green liquid
Odor: Non-specific
Solubility n Water by Wt.: Complete
Boiling Point: Over 192°F (89°C)
Freezing Point: Below 32°F (0°C)
Vapor Density (Air=1): > 1
Evaporation Rate (BuAc=1): < 1
Specific Gravity: 1.04 @ 68°F (20°C)
pH Concentrate: 12.0 – 12.5

4. Fire and Explosion Hazard

Flash Point: No data
Flammable Limits in Air: No data
Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective equipment.
Unusual Fire and Explosion Hazards: None known
Extinguishing Media: No specific requirement

5. Health Hazard Data

COMPONENT	OSHA/ PEL	ACGIH/ TLV
STPP	15 mg/m³ Dust	10 mg/m³ Dust

Effect of Overexposure:
Swallowing: May cause nausea, vomiting, and diarrhea
Skin Contact: May cause irritation if not washed immediately
Inhalation: May cause irritation, coughing, nausea, and headache.
Eye Contact: Short-term contact may cause irritation. Prolonged contact may cause irreversible damage to eyes.

Carcinogenicity:
NTR: No
IARC: No
OSHA: No

6. Reactivity Data

Stability: Stable at normal conditions
Conditions to Avoid: None known at normal conditions
Incompatibility (Materials to Avoid): Strong acids and oxidizers
Hazardous Combustion or Decomposition Products: None known at normal conditions
Hazardous Polymerization: Will not occur

7. Spill, Leak, and Waste Disposal Procedures

Steps to be Taken in Case Material is Released or Spilled: Sweep, scoop, or vacuum material and place in closed container. Flush residue with water. The wet, contaminated surface may be slippery.
Waste Disposal Method: Dispose according to all local, state, and federal regulations.

8. Handling and Storage

Store in a closed container in a cool, dry, well-ventilated place away from incompatible materials. Keep out of reach of children.

9. Special Protection Information

Respiratory Protection: Not normally required. A mask or respirator may be used if vapor concentration is high.
Ventilation: Local exhaust or normal facility ventilation
Protective Gloves: Water-resistant gloves
Eye Protection: Safety goggles and/or face shield
Protective Clothing: Wear protective clothing.
Other Protective Clothing Or Equipment: An eyewash station should be nearby and ready for use.

10. Regulation Information

Status On Substance List: None known
Federal EPA: None
State Right-To-Know: None known

11. Transportation Data

Proper Shipping Name: None
D.O.T. Information: Unregulated Commodity

CHEMICAL WARNING LABELS
Required on all containers, tubs, and bottles, which are filled from original containers with potentially hazardous substances

Hazard rating corresponding to the NFPA Rating System:

4 - Extreme
3 - High
2 - Moderate
1 - Slight
0 - Insignificant

NFPA HAZARD RATING

HEALTH: 1

FLAMMABILITY: 0

REACTIVITY: 0

Chemical Warning Label - Certol International, LLC
POWERHOUSE™ All-Purpose Cleaner
No wall reference is necessary

Product Name: POWERHOUSE™ All-Purpose Cleaner
Hazardous Components: STPP
Personal Protection: Gloves, safety goggles, and/or face shield

ROUTE OF ENTRY	HEALTH HAZARD	FIRE HAZARD
✓ Inhalation	✓ Irritant	❒ Below 73ºF (23ºC)
✓ Ingestion	❒ Carcinogen	❒ Below 100ºF (38ºC)
✓ Skin/eye absorption	❒ Toxic	❒ Above 100ºF (38ºC) & not > 200ºF (93ºC)
TARGET ORGAN EFFECTS	❒ Sensitizer	❒ Above 200ºF (93ºC)
✓ Respiratory	❒ Normal Material	✓ Will not burn
❒ Heart	**PHYSICAL HAZARD**	**REACTIVITY**
❒ Kidney	❒ Oxidizer	❒ May detonate
✓ Eyes	❒ Acid	❒ Shock and heat may detonate
✓ Skin	✓ Alkali	❒ Violent chemical change
❒ Prostate	❒ Corrosive	❒ Unstable if heated
❒ Blood	❒ Use no water	✓ Stable
❒ Liver	❒ Radioactive	
❒ CNS		
❒ Other		

MATERIAL SAFETY DATA SHEET

POWER HOUSE LEMON FURNITURE POLISH

1. Product And Company Identification

Supplier
Chase Products Co.
19th and Gardner Road
Broadview, IL 60155 USA

Company Contact: Aludia B. Hernandez
Telephone Number: 708-865-1000
FAX Number: 708-865-0923
E-Mail: sales@chaseproducts.com
Web Site: www.chaseproducts.com

Manufacturer
Chase Products Co.
19th and Gardner Road
Broadview, IL 60155 USA

Company Contact: Aludia B. Hernandez
Telephone Number: 708-865-1000
FAX Number: 708-865-0923
E-Mail: sales@chaseproducts.com
Web Site: www.chaseproducts.com

Supplier Emergency Contacts & Phone Number
Chem-Tel: 1-800-255-3924

Manufacturer Emergency Contacts & Phone Number
Chem-Tel: 1-800-255-3924

Issue Date: 12/28/2005

Product Name: POWER HOUSE LEMON FURNITURE POLISH
Chemical Name: 7-7922-2
CAS Number: Not Established
MSDS Number: 3497
Product Code: 449-1071-2
Product/Material Uses - Furniture Polish

2. Composition/Information On Ingredients

Ingredient Name	CAS Number		Percent Of Total Weight
ISOBUTANE	75-28-5		
LIGHT ALIPHATIC NAPHTHA	64742-89-8		
PETROLEUM DISTILLATE	64742-47-8		
PROPANE	74-98-6		

Hazardous components, according to OSHA, are listed when present at 1.0% or greater. Carcinogens are listed when present at 0.1% or greater.

3. Hazards Identification

Primary Routes(s) Of Entry - Ingestion (possible, but considered unlikely), eye contact, inhalation.
Eye Hazards - May cause irritation after contact with the eyes.
Skin Hazards - None expected.
Ingestion Hazards - This is an aerosol product, ingestion is unlikely to occur.
Inhalation Hazards - Deliberate inhalation of concentrate vapor or mist may cause headaches and dizziness.
Chronic/Carcinogenicity Effects - Chronic: Not known. None of the ingredients, present in excess of 0.1%, are listed as carcinogenic by NTP, IARC or OSHA.
Teratogenicity (Birth Defects) - Not known
Reproductive Effects - Not known
Neurotoxicity - Not known
Mutagenicity (Genetic Effect) - Not known
Signs And Symptoms - Acute: Deliberate inhalation of concentrate vapor or mist may cause headaches, dizziness. Contact with the eyes may cause irritation.

3. Hazards Identification - Continued

Conditions Aggravated By Exposure - May aggravate pre-existing skin disorders..
Conditions Aggravated By Overexposure - May aggravate pre-existing skin disorders.

First Aid (Pictograms)

4. First Aid Measures

Eye - Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Ingestion - Ingestion from an aerosol product is unlikely to occur.
Inhalation - If overcome by vapor, move victim to fresh air. Restore respiration if necessary. Get medical attention if injury develops.

5. Fire Fighting Measures

Flash Point: Not available °F Not available °C
Flash Point Method: Not available
Lower Explosive Limit: Not available
Upper Explosive Limit: Not available

Fire And Explosion Hazards - This product is an aerosol product for which **Flame Projection is 0 in.** Temperatures above 120 F may cause cans to burst.
Extinguishing Media - Use CO2 (Carbon Dioxide), dry chemical, or water fog.
Fire Fighting Instructions - Water spray may be used to cool cans in the vicinity of fire or excessive heat.

6. Accidental Release Measures

Provide adequate ventilation to area being treated. Soak up spills with chemically inert, absorbent material.

7. Handling And Storage

Handling And Storage Precautions - Store in a cool, dry place away from heat and open flame.
Handling Precautions - Do not deliberately inhale vapor or spray mist. Avoid getting spray into eyes. Keep out of reach of children.
Storage Precautions - Keep away from heat, sparks, flame, and other sources of ignition (i.e., pilot lights, electric motors and static electricity).
AEROSOL STORAGE LEVEL I (NFPA-30B)
Work/Hygienic Practices - Wash thoroughly after handling.

Protective Clothing (Pictograms)

8. Exposure Controls/Personal Protection

Engineering Controls - Use with adequate general and local exhaust ventilation.
Eye/Face Protection - Conventional eyeglasses to guard against splashing.
Skin Protection - Household type gloves, if desired.
Respiratory Protection - None required if used in a well-ventilated area.

8. Exposure Controls/Personal Protection - Continued

Ingredient(s) - Exposure Limits
LIGHT ALIPHATIC NAPHTHA
OSHA PEL 300PPM ; ACGIH TLV 300PPM
PETROLEUM DISTILLATE
TWA 1200mg/m3 (Recommended by the manufacturer)
PROPANE
ACGIH TLV-TWA 2500 ppm ; OSHA PEL-TWA 1,000 ppm

9. Physical And Chemical Properties

Appearance - White, creamy emulsion.
Odor - Citrus and slight petroleum odor

Chemical Type: Mixture
Physical State: Liquid
Melting Point: Not applicable °F Not applicable °C
Boiling Point: Water 212 °F Water 100 °C
Specific Gravity: concentrate 0.971
Percent VOCs: 11.68
Solubility: Insoluble in water
Evaporation Rate: Faster than butyl acetate

10. Stability And Reactivity

Stability: Stable
Hazardous Polymerization: Will not occur

Conditions To Avoid (Stability) - Temperatures above 120 F
Incompatible Materials - Avoid heat, open flame and contact with strong oxidizers.
Hazardous Decomposition Products - Thermal decomposition may yield gases like carbon monoxide and carbon dioxide.
Conditions To Avoid (Polymerization) - Temperatures above 120 F

11. Toxicological Information

No Data Available...

12. Ecological Information

No Data Available...

13. Disposal Considerations

Do not puncture or incinerate container. **If empty:** Place in trash or offer for recycling if available. **If partly filled:** Call your local solid waste agency for disposal instructions.

14. Transport Information

Proper Shipping Name - ORM-D Consumer Commodity

Hazard Class
2.1

DOT Identification Number
UN1950

14. Transport Information - Continued

DOT Shipping Label
Aerosol Consumer Commodity

15. Regulatory Information

U.S. Regulatory Information - All ingredients of this product are listed or are excluded from listing under the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

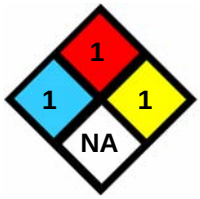
SARA Hazard Classes
Acute Health Hazard

SARA Section 313 Notification - This product does not contain any ingredients (above the *de minimis* level) regulated under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 or 40 CFR 372.

Ingredient(s) - State Regulations
ISOBUTANE
New Jersey - Workplace Hazard; New Jersey - Environmental Hazard; New Jersey - Special Hazard; Pennsylvania - Workplace Hazard; Massachusetts - Hazardous Substance; New York City - Hazardous Substance

PROPANE
New Jersey - Workplace Hazard; New Jersey - Environmental Hazard; New Jersey - Special Hazard; Pennsylvania - Workplace Hazard; Massachusetts - Hazardous Substance; New York City - Hazardous Substance

NFPA



HMIS

HEALTH	1
FLAMMABILITY	1
REACTIVITY	1
PERSONAL PROTECTION	B

16. Other Information

Revision/Preparer Information
MSDS Preparer: Laura E. Radevski
MSDS Preparer Phone Number: 708-865-1000
This MSDS Supercedes A Previous MSDS Dated: 04/06/2005

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitablility of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purposes(s).

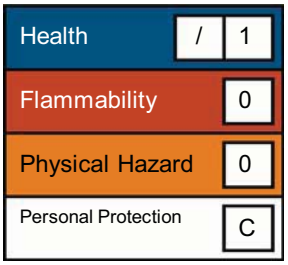
Chase Products Co.

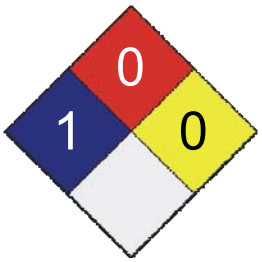
MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	**RID-X® - Septic System Treatment (Liquid)**
UPC CODES	Refer to Section 16
CAS #	Mixture
Product use	Septic treatment
Distributed by	Reckitt Benckiser Morris Corporate Center IV 399 Interpace Parkway P.O. Box 225 Parsippany, NJ 07054-0225 In Case of Emergency: 1-800-228-4722 Transportation Emergencies: 24 Hour Number: North America: CHEMTREC: 1-800-424-9300 Outside North America: 1-703-527-3887

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0





2. Hazards Identification

Emergency overview

CAUTION: May cause eye irritation. May cause mild skin irritation after prolonged contact. Inhaling mist from this product could cause irritation to the lungs and mucous membranes. Ingestion could cause irritation to the mouth and throat. Individuals having known allergies, as well as those with respiratory disease or disorders should avoid contact with this product.

KEEP OUT OF REACH OF CHILDREN.

Potential short term health effects

Routes of exposure	Eye, Skin contact, Inhalation, Ingestion.
Eyes	May cause eye irritation.
Skin	May cause mild skin irritation after prolonged contact.
Inhalation	Inhaling mist from this product could cause irritation to the lungs and mucous membranes.
Ingestion	May be harmful if swallowed. Ingestion could cause irritation of the mouth and throat.
Target organs	Eyes. Respiratory system. Skin.
Chronic effects	The finished product is not expected to have chronic health effects.
Signs and symptoms	Symptoms may include redness, edema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
A-Amylase (EC# 3.2.1.1)	9000-90-2	10 - 20
Bacteria, complex with amylase and proteinase	68920-42-3	10 - 20
Cellulase (ID# 3.2.1.4)	9012-54-8	10 - 20
Subtilisin carlsburg	9014-01-1	10 - 20
Triacylglycerol Lipase (EC# 3.1.1.3)	9001-62-1	10 - 20

4. First Aid Measures

First aid procedures	
Eye contact	If in eyes, rinse eyes with water for fifteen minutes, if irritation persists, see a physician.
Skin contact	If on skin, wash the product off the skin with soap and water. If irritation develops, seek the care of a physician.
Inhalation	If inhaled, move to fresh air and avoid further contact with product. If breathing or skin problems develop, see the care of a physician.
Ingestion	If ingested, drink water to dilute and call a physician. Induce vomiting only if advised by a physician. Contains enzymes.
Notes to physician	Contains a bacterial complex with amylase, protease and subtilisin protease enzymes.
General advice	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Not flammable by OSHA criteria.
Extinguishing media	
Suitable extinguishing media	Water spray. Carbon dioxide. Dry chemical.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Not available
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Ensure adequate ventilation. Use personal protective equipment.
Methods for containment	Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labelled containers. Prevent large spills from entering sewers or waterways. Contact emergency services and supplier for advice.

7. Handling and Storage

Handling	Use good industrial hygiene practices in handling this material. When using do not eat or drink. Minimize dust generation and accumulation. Avoid contact with eyes, skin and clothing.
Storage	Keep out of reach of children. Store in a closed container away from incompatible materials. Do not store in direct sunlight. Store away from heat. Store in a cool dry place inaccessible to children and pets.

8. Exposure Controls / Personal Protection

Exposure limits

Ingredient(s)	Exposure Limits
A-Amylase (EC# 3.2.1.1)	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Bacteria, complex with amylase and proteinase	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Cellulase (ID# 3.2.1.4)	**ACGIH-TLV** Not established **OSHA-PEL** Not established
Subtilisin carlsburg	**ACGIH-TLV** Ceiling: 0.0001 mg/m3 **OSHA-PEL** Not established
Triacylglycerol Lipase (EC# 3.1.1.3)	**ACGIH-TLV** TWA: 10 mg/m3 **OSHA-PEL** Not established

Engineering controls General ventilation normally adequate.

Personal protective equipment

Eye / face protection Avoid contact with eyes. Wear safety glasses with side shields.
Emergency responders should wear full eye and face protection.

Hand protection Avoid contact with the skin. Wear impervious gloves where the potential for contact with the liquid is possible.
Emergency responders should wear impermeable gloves.

Skin and body protection long sleeved clothing
Emergency responders should wear impermeable clothing and footwear when responding to a situation where contact with the liquid is possible.
Follow label directions carefully.

Respiratory protection None required where adequate ventilation conditions exist. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of vapours generated by this product during a spill or other clean-up operations.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Washing with soap and water after use is recommended as good hygienic practice to prevent possible eye irritation from hand contact.

9. Physical and Chemical Properties

Appearance	Liquid.
Color	Blue to Blue Green
Form	Liquid
Odor	soapy
Odor threshold	Not available
Physical state	Liquid
pH	6.3 - 8.8
Freezing point	Not available

Pour point	Not available
Boiling point	Not available
Flash point	> 199.94 °F (> 93.3 °C)
Evaporation rate	Not available
Flammability limits in air, lower, % by volume	Not available
Flammability limits in air, upper, % by volume	Not available
Vapor pressure	Not available
Vapor density	Not available
Specific gravity	> 1
Octanol/water coefficient	Not available
Solubility (H2O)	Complete
Auto-ignition temperature	Not available

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Do not mix with other chemicals.
Incompatible materials	Acids. Oxidizers.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
A-Amylase (EC# 3.2.1.1)	Not available
Bacteria, complex with amylase and proteinase	Not available
Cellulase (ID# 3.2.1.4)	Not available
Subtilisin carlsburg	Not available
Triacylglycerol Lipase (EC# 3.1.1.3)	Not available

Component analysis - Oral LD50

Ingredient(s)	LD50
A-Amylase (EC# 3.2.1.1)	7500 mg/kg rat
Bacteria, complex with amylase and proteinase	Not available
Cellulase (ID# 3.2.1.4)	30900 mg/kg mouse
Subtilisin carlsburg	Not available
Triacylglycerol Lipase (EC# 3.1.1.3)	45500 mg/kg rat

Effects of acute exposure

Eye	May cause eye irritation.
Skin	May cause mild skin irritation after prolonged contact.
Inhalation	Inhaling mist from this product could cause irritation to the lungs and mucous membranes.
Ingestion	May be harmful if swallowed. Ingestion could cause irritation of the mouth and throat.
Sensitization	May cause sensitization of susceptible persons.
Chronic effects	The finished product is not expected to have chronic health effects.
Carcinogenicity	The finished product is not expected to have chronic health effects.
Mutagenicity	The finished product is not expected to have chronic health effects.
Reproductive effects	The finished product is not expected to have chronic health effects.
Teratogenicity	The finished product is not expected to have chronic health effects.

Synergistic Materials	Not available

12. Ecological Information

Ecotoxicity	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Partition coefficient	Not available
Mobility in environmental media	Not available
Chemical fate information	Not available

13. Disposal Considerations

Waste codes	Not available
Disposal instructions	Small quantities of waste liquid may be discharged into a sanitary sewer. Discard any absorbed material in trash collection. Rinse empty container thoroughly and discard in trash or recycle. Large Quantities: Wearing appropriate personal protective equipment, collect and store in an appropriate container for disposal according to local, state, provincial and federal regulations. Avoid creating a mist during the clean-up operations. do not use a high pressure washer for clean-up of spilled or waste materials.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

UN/ID N.o. Not applicable

U.S. Department of Transportation (DOT): Classification: Not regulated

Proper shipping name	Not applicable
U.S. DOT Hazard Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
DOT RQ (lbs)	Not applicable
ERG NO	Not applicable

Transportation of Dangerous Goods (TDG - Canada): Classification: Not regulated

Proper shipping name	Not applicable
Status	Not applicable
Packing group	Not applicable

IMDG (Marine Transport): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk	Not applicable
Packing group	Not applicable
IMDG Page	Not applicable
Marine pollutant	Not applicable
EMS	Not applicable
MFAG	Not applicable
Maximum Quantity	Not applicable

IATA/ICAO (Air): Classification: Not regulated

Proper shipping name	Not applicable
Class	Not applicable
Subsidiary Risk:	Not applicable
Packing group	Not applicable
Maximum Quantity	Not applicable

15. Regulatory Information

US Federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
CERCLA/SARA Hazardous Substances - Not applicable.

Product Registration: Not registered

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Not available

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Subtilisin carlsburg	9014-01-1	Present

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

Disclaimer

This product should only be used as directed on the label and for the purpose intended. To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Further information

19200-79281 - 64 oz. - 0242210; 19200-83007 - 48 oz. - 0242210; 19200-83383 - 24 oz. - 0242210; 19200-83384 - 32 oz. - 0242210

Issue date 10-June-2010

Effective date 01-Apr-2010

Prepared by Reckitt Benckiser Regulatory Department 800-333-3899

Other information

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

Material Safety Data Sheet

24 Hour Assistance:
1-847-367-7700
Rust-Oleum Corp.
www.rustoleum.com

Section 1 - Chemical Product / Company Information

Product Name:	STRUST SSPR 6PK METALC GOLD	Revision Date:	10/01/2010
Identification Number:	7710830		
Product Use/Class:	Metallic / Aerosol		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
Preparer:	Regulatory Department		

Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL CEILING
Toluene	108-88-3	40.0	20 ppm	N.E.	200 ppm	300 ppm
Liquefied Petroleum Gas	68476-86-8	35.0	N.E.	N.E.	N.E.	N.E.
Acetone	67-64-1	25.0	500 ppm	750 ppm	1000 ppm	N.E.
Copper Compounds	7440-50-8	5.0	1 mg/m3 (Dust)	N.E.	1 mg/m3 (Dust)	N.E.

Section 3 - Hazards Identification

*** Emergency Overview ***: Contents Under Pressure. Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Vapors may cause flash fire or explosion. Harmful if swallowed. Extremely flammable liquid and vapor.

Effects Of Overexposure - Eye Contact: Causes eye irritation.

Effects Of Overexposure - Skin Contact: Prolonged or repeated contact may cause skin irritation. Substance may cause slight skin irritation.

Effects Of Overexposure - Inhalation: High vapor concentrations are irritating to the eyes, nose, throat and lungs. Avoid breathing vapors or mists. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Harmful if inhaled.

Effects Of Overexposure - Ingestion: Aspiration hazard if swallowed; can enter lungs and cause damage. Substance may be harmful if swallowed.

Effects Of Overexposure - Chronic Hazards: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

Primary Route(s) Of Entry: Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

Section 4 - First Aid Measures

First Aid - Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

First Aid - Skin Contact: Wash with soap and water. Get medical attention if irritation develops or persists.

First Aid - Inhalation: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

First Aid - Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention.

Section 5 - Fire Fighting Measures

Flash Point: -156 F (Setaflash)

Extinguishing Media: Film Forming Foam, Carbon Dioxide, Dry Chemical, Water Fog

Unusual Fire And Explosion Hazards: Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. FLASH POINT IS LESS THAN 20 °. F. - EXTREMELY FLAMMABLE LIQUID AND VAPOR! Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can.

Special Firefighting Procedures: Evacuate area and fight fire from a safe distance.

Section 6 - Accidental Release Measures

Steps To Be Taken If Material Is Released Or Spilled: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools.

Section 7 - Handling And Storage

Handling: Wash thoroughly after handling. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. Avoid breathing vapor or mist. Use only in a well-ventilated area. Wash hands before eating.

Storage: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class I flammable liquids. Contents under pressure. Do not expose to heat or store above 120 ° F.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment.

Respiratory Protection: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

Skin Protection: Use impervious gloves to prevent skin contact and absorption of this material through the skin. Nitrile or Neoprene gloves may afford adequate skin protection.

Eye Protection: Use safety eyewear designed to protect against splash of liquids.

Other protective equipment: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application.

Hygienic Practices: Wash thoroughly with soap and water before eating, drinking or smoking.

Section 9 - Physical And Chemical Properties

Vapor Density:	Heavier than Air	Odor:	Solvent Like
Appearance:	Aerosolized Mist	Evaporation Rate:	Faster than Ether
Solubility in H2O:	Slight	Freeze Point:	N.D.
Specific Gravity:	0.745	PH:	N.D.
Physical State:	Liquid		

(See section 16 for abbreviation legend)

Section 10 - Stability And Reactivity

Conditions To Avoid: Avoid temperatures above 120 ° F. Avoid all possible sources of ignition.

Incompatibility: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

Hazardous Decomposition: When heated to decomposition, it emits acrid smoke and irritating fumes. By open flame, carbon monoxide and carbon dioxide.

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

Section 11 - Toxicological Information

Chemical Name	LD50	LC50
Toluene	636 mg/kg (Rat, Oral)	>26700 ppm (Rat, Inhalation, 1Hr)
Liquefied Petroleum Gas	N.E.	N.E.
Acetone	5800 mg/kg (Rat)	50100 mg/m3 (Rat, 8Hr)
Copper Compounds	N.E.	N.E.

Section 12 - Ecological Information

Ecological Information: Product is a mixture of listed components.

Section 13 - Disposal Information

Disposal Information: Dispose of material in accordance to local, state and federal regulations and ordinances. Do not allow to enter storm drains or sewer systems.

Section 14 - Transportation Information

	Domestic (USDOT)	International (IMDG)	Air (IATA)
Proper Shippping Name:	Consumer Commodity	Aerosols	Aerosols
Hazard Class:	ORM-D	2.1	2.1
UN Number:	N.A.	UN1950	UN1950
Packing Group:	N.A.	N.A.	N.A.
Limited Quantity:	No	Yes	Yes

Section 15 - Regulatory Information

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD, FIRE HAZARD, PRESSURIZED GAS HAZARD

SARA Section 313:

Listed below are the substances (if any) contained in this product that are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS Number
Toluene	108-88-3
Copper Compounds	7440-50-8

Toxic Substances Control Act:

Listed below are the substances (if any) contained in this product that are subject to the reporting requirements of TSCA 12(B) if exported from the United States:

U.S. State Regulations: As follows -

New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS Number
Acrylic Resin	PROPRIETARY

Pennsylvania Right-to-Know:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS Number
Acrylic Resin	PROPRIETARY

International Regulations: As follows -

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: AB5 D2A D2B

Section 16 - Other Information

NFPA Ratings:
Health: 2 Flammability: 4 Instability: 0

VOLATILE ORGANIC COMPOUNDS, g/l: 631

REASON FOR REVISION: Regulatory Update

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this material safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

MATERIAL SAFETY DATA SHEET - 16 Sections

SECTION 1 -- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier BLACK FURNACE CEMENT ITEMS 64, 64A,64C,65,66,67,68,68G,			
Product Use REPAIRING WOOD STOVES AND SEALING FIBERGLASS GASKETS			
Manufacturer's Name RUTLAND FIRE CLAY COMPANY		EMERGENCY CONTACT CHEMTREC	
Street Address 7 CRABTREE ROAD		DOMESTIC PHONE NUMBER 800-424-9300	
City JACKSONVILLE	State IL	INTERNATIONAL CONTACT NUMBER 703-527-3887	
Zip code 62650	Emergency Telephone 217-245-7810		
Date MSDS Prepared November 4, 2010	MSDS Prepared By GENE Addison	Phone Number 217-245-7810	

SECTION 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients *(specific)*	%	CAS Number	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED
SODIUM HYDROXIDE	TRADE SECRET	01310-73-2	2 MG/M^3	2 MG/M^3	
SODIUM SILICATE	TRADE SECRET	01344-09-8	NONE ESTABLISHED		
MICA	TRADE SECRET	12001-26-2	3 MG/M^3	3 MG/M^3	RESPIRABLE*
SILICA, QUARTZ	TRADE SECRET	14808-60-7	10 MG/M^3 PER %SiO_2	0.025 MG/M^3	RESPIRABLE*
SILICA, AMORPHOUS	IMPURITY	07631-86-9	10 MG/M^3 PER %SiO_2	0.1 MG/M^3	RESPIRABLE*

SECTION 3 -- HAZARD IDENTIFICATION

Route of Entry

[X] SKIN CONTACT [ ] SKIN ABSORPTION [X] EYE CONTACT [ ] INHALATION [ ] INGESTION

[Emergency Overview]

PRODUCT IS BLACK AND CONTACT WITH SKIN CAUSES IRRITATION WITH POSSIBLE BURNS. EYE DAMAGE CAN BE SEVERE IF NOT REMOVED PROMPTLY FROM EYE

[Potential Health Effects]

EYE-CAUSES IRRITATION AND POSSIBLE CORROSIVE BURNS

SKIN - CAUSES SKIN IRRITATION AND POSSIBLE CORROSIVE BURNS

INGESTION - VERY UNLIKELY, BUT HARMFUL GET MEDICAL ATTENTION

INHALATION - NOT LIKELY WITH MIXED PRODUCT

SECTION 4 -- FIRST AID MEASURES

Skin Contact

WASH OFF SKIN WITH LARGE AMOUNT OF SOAP AND Water

Eye Contact

WASH WITH WARM WATER FOR 15 MINUTES AND SEEK MEDICAL ATTENTION

Inhalation

PRODUCT IS A PASTE AND CANNOT BE INHALED

Ingestion

HIGHLY UNLIKELY, BUT SEEK MEDICAL ATTENTION

SECTION 5 -- FIRE FIGHTING MEASURES

Flammable NON-FLAMMABLE	If yes, under what conditions	
Means of Extinction N/A		
Flashpoint (°C) and Method N/A		
Auto Ignition Temperature (°C) N/A		
Hazardous Combustion Products N/A		
[NFPA] HEALTH 2 FLAMMABILITY 0 REACTIVITY 0		

SECTION 6 -- ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures

SCOOP UP PLACE IN DRUM

SECTION 7 -- HANDLING AND STORAGE

Handling Procedures and Equipment

MATERIAL IS A SOLID PASTE AND CAN BE HANDLED IN DRUMS USING DRUM LIFTERS

MINIMIZE CONTACT WITH SKIN WHILE HANDLING

Storage Requirements

STORE IN AIRTIGHT CONTAINERS AT ROOM TEMPERATURE FOR BEST SHELF LIFE

SECTION 8 -- EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits

[X] ACGIH TLV [X] OSHA PEL [ ] OTHER *(Specify)*

2MG/ML

Specific Engineering Controls *(Such as ventilation, enclosed process)*

Personal Protective Equipment

[X] GLOVES [ ] RESPIRATOR [X] EYE [X] FOOTWEAR [ ] CLOTHING [ ] OTHER

If checked, please specify type

GLOVES CAN BE DISPOSABLE LATEX OR WASHABLE NITRILE, RUBBER, OR LATEX TYPE

SAFETY GLASSES OR GOGGLES ARE RECOMMENDED

FOOTWEAR SHOULD NOT BE FLIP FLOPS, SANDALS, OR OPEN TOED

Product Identifier

SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

Physical State SOLID BLACK PASTE	Odor and appearance ALMOST NO ODOR	Odor Threshold (ppm) N/A
Specific Gravity 2	Vapor Density (Air = 1) N/A	Vapor Pressure (mmHg) N/A
Evaporation Rate N/A	Boiling Point (°C) N/A	Freezing Point (°C) N/A
pH 13	Coefficient of Water/Oil Distribution NOT DETERMINED	[Solubility in Water] BINDER DISSOLVES IN WATER UNTIL CURED

SECTION 10 -- STABILITY AND RELIABILITY

Chemical Stability [X] YES [ ] NO	If no, under which conditions?
Incompatibility with other substances [X] YES [ ] NO	If yes, which ones? ACIDS
Reactivity , and under what conditions?	
Hazardous Decomposition Products	

SECTION 11 -- TOXICOLOGICAL INFORMATION

Effects of Acute Exposure ACUTE HAZARDS FOR EYE AND SKIN ON CONTACT IRRITATIONS AND BURNS WILL OCCUR	
Effects of Chronic Exposure NONE KNOWN	
Irritancy of Product PRODUCT IS IRRITATING TO SEVERAL IRRITATING TO EYE AND SKIN OVER TIME	
Skin Sensitization SKIN IS IMMEDIATELY IRRITATED BY PRODUCT,	Respiratory Sensitization NO INFORMATION AVAILABLE
Carcinogenicity-IARC NO INFORMATION AVAILABLE	Carcinogenicity-ACGIH NO INFORMATION AVAILABLE
Reproductive Toxicity NO INFORMATION AVAILABLE	Teratogenicity NO INFORMATION AVAILABLE
Embryotoxicity NO INFORMATION AVAILABLE	Mutagenicity NO INFORMATION AVAILABLE
Name of Synergistic Products/Effects NO INFORMATION AVAILABLE	

Product Identifier

SECTION 12 -- ECOLOGICAL INFORMATION

Aquatic Toxicity

LEACHING OF UNCURED PRODUCT INTO WATERWAYS AND LAKES WILL BE SIMILAR TO SODIUM SILICATE AND LOW LEVELS OF SODIUM HYDROXIDE

SECTION 13 -- DISPOSAL CONSIDERATIONS

Waste Disposal

DISPOSE OF IN ACCORD WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS

SECTION 14 -- TRANSPORT INFORMATION

Special Shipping Information

PIN

TDG	[DOT]
NOT REGULATED	NOT REGULATED
[IMO]	[ICAO]
NOT REGULATED	NOT REGULATED

SECTION 15 -- REGULATORY INFORMATION

SARA SECTION 302 RQ & TPQ SODIUM HYDROXIDE 1000 LB. RQ	[OSHA] AS LISTED ON PAGE 1
SARA SECTION 313 SODIUM HYDROXIDE	[TSCA] SIGNIFICANT NEW USE RULE NO SNUR'S
CLEAN AIR ACT CONTAINS NO HAZARDOUS AIR POLLUTANTS CLEAN WATER ACT	[TSCA] ALL INGREDIENTS ON TSCA LIST HEALTH & SAFETY REPORTING LIST NOT ON LIST CHEMICAL TEST RULES NOT UNDER RULES SECTION 12b NOT LISTED
STATE RIGHT TO KNOW LISTS NOT ON ANY STATE LIST	CERCLA SODIUM HYDROXIDE 1000 LB. rq

EUROPEAN /INTERNATIONAL REGULATIONS
HAZARDOUS LABELING IN ACCORDANCE WITH EC DIRECTIVES
HAZARD SYMBOLS Xi
RISK PHRASES R 36/38
SAFETY PHRASES S 24 S 26 S 28

SECTION 16 -- OTHER INFORMATION

THE ABOVE INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS, TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. IN NO EVENT SHALL RUTLAND FIRE CLAY COMPANY BE LIABLE FOR ANY CLAIMS, LOSSES, OR DAMAGES OF ANY THIRD PARTY OR FOR LOST PROFITS OR ANY SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES, HOWSOEVER ARISING, EVEN IF RUTLAND HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

HMIS Rating		NFPA Rating	
Health :	1	Health :	1
Flammability	0	Flammability	0
Reactivity :	0	Reactivity :	0

Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Scotchgard™ Heavy Duty Carpet Protector (Cat. No. 1023)
MANUFACTURER: 3M
DIVISION: Protective Materials & Consumer Specialties Division

ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 03/14/2007
Supercedes Date: 01/15/2007

Document Group: 18-4806-8

Product Use:
Intended Use: Water, oil and stain protector for carpets and rugs

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
Water	7732-18-5	60 - 90
Hydrocarbon Propellant	68476-85-7	5 - 10
Ethyl Alcohol	64-17-5	5 - 10
Fluorochemical Urethane	Trade Secret	1 - 5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Aerosol
Odor, Color, Grade: Milky white liquid in aerosol. Floral odor.
General Physical Form: Liquid
Immediate health, physical, and environmental hazards: Aerosol container contains flammable gas under pressure. Closed containers exposed to heat from fire may build pressure and explode. Aerosol container contains gas under pressure. Aerosol container contains flammable material under pressure. Contains a chemical or chemicals which can cause cancer. May cause target organ effects. Contains a chemical or chemicals which can cause birth defects or other reproductive harm. NOTE: This product contains ethanol. There are data associating human consumption of alcoholic beverages (ethanol) with developmental toxicity. This is not an expected effect during the forseeable use of this product.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, and itching.

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Simple Asphyxiation: Signs/symptoms may include increased heart rate, rapid respirations, drowsiness, headache, incoordination, altered judgement, nausea, vomiting, lethargy, seizures, coma, and may be fatal.

If thermal decomposition occurs:
May be harmful if inhaled.

May be absorbed following inhalation and cause target organ effects.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Prolonged or repeated exposure may cause:
Liver Effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.
NOTE: This product contains ethanol. There are data associating human consumption of alcoholic beverages (ethanol) with developmental toxicity. This is not an expected effect during the foreseeable use of this product.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

NOTE: This product contains ethanol. In IARC published Monograph No. 44, entitled, "Alcohol Drinking", the carcinogenicity of ethanol was determined based on chronic exposure to ethanol through human consumption of alcoholic beverages. This is not an expected effect during the foreseeable use of this product.

Ingredient	C.A.S. No.	Class Description	Regulation
Ethyl Alcohol	64-17-5	Group 1	International Agency for Research on Cancer

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. Get medical attention.

Skin Contact: Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	*Not Applicable*
Flash Point	*Not Applicable*
Flammable Limits - LEL	*Not Applicable*
Flammable Limits - UEL	*Not Applicable*
OSHA Flammability Classification:	Not Applicable

5.2 EXTINGUISHING MEDIA

Ordinary combustible material. Use fire extinguishers with class A extinguishing agents (e.g., water, foam).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Exposure to extreme heat can give rise to thermal decomposition. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Closed containers exposed to heat from fire may build pressure and explode. Aerosol container contains gas under pressure. Aerosol container contains flammable material under pressure.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation and personal protective equipment. Evacuate unprotected and untrained personnel from the hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area. WARNING ! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. If it can be done safely, place the leaking containers in an exhaust hood or well- ventilated area. Contain spill, using absorbent if necessary. Collect spilled material with non-sparking tools. Clean up residue. Place depressurized cans and clean up wastes in a metal container approved for transportation. Seal the container. WARNING ! To avoid problems with pressure buildup, slowly leaking pressurized aerosol cans should not be placed in sealed containers.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Keep out of the reach of children. Aerosol container contains flammable gas under pressure. No smoking while handling this material. Avoid breathing of vapors, mists or spray. Avoid eye contact with vapors, mists, or spray. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Do not pierce or burn container, even after use. Do not spray near flames or sources of ignition.

7.2 STORAGE

Keep container in well-ventilated area. Keep container tightly closed. Store away from heat.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Use in a well-ventilated area. Do not use in a confined area or areas with little or no air movement. Do not remain in area where available oxygen may be reduced. For those situations where the fluid might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Avoid eye contact with vapors, mists, or spray.
The following eye protection(s) are recommended: Safety Glasses with side shields.

8.2.2 Skin Protection

Avoid prolonged or repeated skin contact. Gloves not normally required.

Keep children and pets out of area until the treated article is thoroughly dry.

8.2.3 Respiratory Protection

Avoid breathing of vapors, mists or spray. Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

Ingredient	Authority	Type	Limit	Additional Information
Ethyl Alcohol	ACGIH	TWA	1000 ppm	Table A4
Ethyl Alcohol	OSHA	TWA	1000 ppm	Table Z-1
Hydrocarbon Propellant	ACGIH	TWA	1000 ppm	
Hydrocarbon Propellant	OSHA	TWA	1000 ppm	Table Z-1A
TIN, ORGANIC COMPOUNDS	ACGIH	TWA, as Sn	0.1 mg/m3	Skin Notation*; Table A4
TIN, ORGANIC COMPOUNDS	ACGIH	STEL, as Sn	0.2 mg/m3	Skin Notation*
TIN, ORGANIC COMPOUNDS	OSHA	TWA, as Sn	0.1 mg/m3	Skin Notation*; Table Z-1A

* Substance(s) refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:
ACGIH: American Conference of Governmental Industrial Hygienists
CMRG: Chemical Manufacturer Recommended Guideline
OSHA: Occupational Safety and Health Administration
AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Physical Form:	Aerosol
Odor, Color, Grade:	Milky white liquid in aerosol. Floral odor.
General Physical Form:	Liquid
Autoignition temperature	*Not Applicable*
Flash Point	*Not Applicable*
Flammable Limits - LEL	*Not Applicable*
Flammable Limits - UEL	*Not Applicable*
Boiling point	*No Data Available*
Vapor Density	*No Data Available*
Vapor Pressure	*No Data Available*
Specific Gravity	Approximately 1 [*Ref Std:* WATER=1] [*Details:* (Liquid fill only)]
pH	Approximately 9 Units not avail. or not appl. [*Details:* (Liquid fill only)]
Melting point	*Not Applicable*
Solubility In Water	Complete
Volatile Organic Compounds	16 % weight
Percent volatile	Approximately 95 % weight

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: None known

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Fluoride	During Combustion

Hazardous Decomposition: Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure

Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure.

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: To reclaim or return, contact your 3M sales representative.
Incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF. Facility must be capable of handling halogenated materials.
As a disposal alternative, dispose of waste product in a facility permitted to accept chemical waste. Facility must be capable of handling aerosol cans. Dispose of empty product containers in a sanitary landfill.

EPA Hazardous Waste Number (RCRA): Not regulated

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

ID Number	UPC	ID Number	UPC
70-0711-7122-0	000-21200-57028-5	70-0713-7749-6	
70-0713-7962-5		70-0714-1328-3	500-511331-97829-9
70-0714-1705-2	000-51131-98026-6	70-0714-2379-5	500-21200-57028-0
70-0714-2382-9	000-21200-47213-8	70-0714-2547-7	000-21200-47213-8
70-0714-2559-2	500-21200-57028-0	70-0714-7449-1	500-21200-50231-1

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

This material contains one or more substances which are subject to a TSCA Consent Order or Significant New Use Rule.

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

This material contains a chemical which requires export notification under TSCA Section 12[b]:

Ingredient (Category if applicable)	C.A.S. No	Regulation	Status
Fluorochemical Urethane	Trade Secret	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Applicable

STATE REGULATIONS

Contact 3M for more information.

CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

Contact 3M for more information.

INTERNATIONAL REGULATIONS

Contact 3M for more information.

US LABEL INFORMATION

PRECAUTIONS: Keep children and pets out of area until article is dry.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 3 **Flammability:** 1 **Reactivity:** 0 **Special Hazards:** None
Aerosol Storage Code: 1

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 2 **Flammability:** 1 **Reactivity:** 0 **Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS®) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint and Coatings Association (NPCA).

Reason for Reissue: Updated composition.

Revision Changes:
Section 14: ID Number(s) and/or UPC(s) was modified.

3M MSDSs are available at www.3M.com

Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SCOTCHGARD™ 3M Pet Care Fabric and Upholstery Protector
MANUFACTURER: 3M
DIVISION: Protective Materials & Consumer Specialties Division

ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 09/20/2007
Supercedes Date: 08/22/2007

Document Group: 22-6762-3

Product Use:
Intended Use: Fabric and Upholstery Protector

SECTION 2: INGREDIENTS

Ingredient	C.A.S. No.	% by Wt
Acetone	67-64-1	37 - 41
Isopropyl Alcohol	67-63-0	31 - 35
Light Alkylate Petroleum Naphtha	64741-66-8	18 - 22
Carbon Dioxide	124-38-9	2 - 6
Fluorochemical Urethane	Trade Secret	1 - 5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Aerosol
Odor, Color, Grade: liquid with chemical odor, contents under pressure.
General Physical Form: Liquid
Immediate health, physical, and environmental hazards: Aerosol container contains flammable gas under pressure. Closed containers exposed to heat from fire may build pressure and explode. Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back. May cause target organ effects.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
Mild Eye Irritation: Signs/symptoms may include redness, pain, and tearing.

Skin Contact:
Moderate Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Intentional concentration and inhalation may be harmful or fatal.

If thermal decomposition occurs:
May be harmful if inhaled.

May be absorbed following inhalation and cause target organ effects.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	> 700 ºF [*Details:* For liquid only]
Flash Point	-2 ºF [*Test Method:* Closed Cup]
Flammable Limits - LEL	0.9 %
Flammable Limits - UEL	12.7 %
OSHA Flammability Classification:	Class IB Flammable Liquid

5.2 EXTINGUISHING MEDIA
Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: For leaks or spills which have not ignited, water spray can be used to disperse the flammable vapor and protect personnel attempting to stop the leak. Exposure to extreme heat can give rise to thermal decomposition. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Extremely flammable liquid and vapor. Aerosol container contains flammable material under pressure. Closed containers exposed to heat from fire may build pressure and explode. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation and personal protective equipment. Evacuate unprotected and untrained personnel from the hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area. WARNING ! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. If it can be done safely, place the leaking containers in an exhaust hood or well- ventilated area. Contain spill, using absorbent if necessary. Collect spilled material with non-sparking tools. Clean up residue. Place depressurized cans and clean up wastes in a metal container approved for transportation. Seal the container. WARNING ! To avoid problems with pressure buildup, slowly leaking pressurized aerosol cans should not be placed in sealed containers.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING
Keep out of the reach of children. Aerosol container contains flammable gas under pressure. Avoid breathing of airborne material. Avoid prolonged or repeated skin contact. Avoid eye contact with vapors, mists, or spray. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Do not pierce or burn container, even after use. Do not spray near flames or sources of ignition. Keep away from heat, sparks, open flame, pilot lights and other sources of ignition. Avoid vapor contact with open flame, welding arcs or other high temperature sources which may cause vapor decomposition to produce toxic gases. No smoking while handling this material.

7.2 STORAGE
Store away from heat. Store out of direct sunlight. Do not heat under confinement to avoid risk of explosion Store away from acids.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Use in a well-ventilated area. Do not use in a confined area or areas with little or no air movement.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

As a good industrial hygiene practice:

Avoid eye contact with vapors, mists, or spray.

The following eye protection(s) are recommended: Safety Glasses with side shields.

8.2.2 Skin Protection

Gloves not normally required.

As a good industrial hygiene practice:

Avoid prolonged or repeated skin contact.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.

Gloves made from the following material(s) are recommended: Butyl Rubber, Polyethylene/Ethylene Vinyl Alcohol.

8.2.3 Respiratory Protection

Avoid breathing of vapors, mists or spray. Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

Ingredient	Authority	Type	Limit	Additional Information
Acetone	ACGIH	TWA	500 ppm	Table A4
Acetone	ACGIH	STEL	750 ppm	Table A4
Acetone	OSHA	TWA, Vacated	750 ppm	
Acetone	OSHA	TWA	1000 ppm	Table Z-1
Acetone	OSHA	STEL, Vacated	1000 ppm	
Carbon Dioxide	ACGIH	TWA	5000 ppm	
Carbon Dioxide	ACGIH	STEL	30000 ppm	
Carbon Dioxide	OSHA	TWA	10000 ppm	Table Z-1A
Carbon Dioxide	OSHA	STEL	30000 ppm	Table Z-1A
Isopropyl Alcohol	ACGIH	TWA	200 ppm	Table A4
Isopropyl Alcohol	ACGIH	STEL	400 ppm	Table A4
Isopropyl Alcohol	OSHA	TWA	400 ppm	Table Z-1A
Isopropyl Alcohol	OSHA	STEL	500 ppm	Table Z-1A

VAC Vacated PEL:Vacated Permissible Exposure Limits [PEL] are enforced as the OSHA PEL in some states. Check with your local regulatory agency.

SOURCE OF EXPOSURE LIMIT DATA:

ACGIH: American Conference of Governmental Industrial Hygienists
CMRG: Chemical Manufacturer Recommended Guideline
OSHA: Occupational Safety and Health Administration
AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Physical Form:	Aerosol
Odor, Color, Grade:	liquid with chemical odor, contents under pressure.
General Physical Form:	Liquid
Autoignition temperature	> 700 ºF [*Details:* For liquid only]
Flash Point	-2 ºF [*Test Method:* Closed Cup]
Flammable Limits - LEL	0.9 %
Flammable Limits - UEL	12.7 %
Boiling point	>=134 ºF
Vapor Density	*No Data Available*
Vapor Pressure	<=187 mmHg [@ 20 ºC]
Specific Gravity	0.8 [*Details:* (Liquid fill only)]
pH	*Not Applicable*
Melting point	*Not Applicable*
Solubility in Water	Moderate
Volatile Organic Compounds	Approximately 54 % weight
Percent volatile	Approximately 92 % weight

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Heat

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Fluoride	During Combustion

Hazardous Decomposition: Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure.

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: To reclaim or return, contact your 3M sales representative.
Incinerate in a permitted hazardous waste incinerator. The facility should be equipped to handle gaseous waste.
Facility must be capable of handling aerosol cans. Combustion products will include HF. Facility must be capable of handling halogenated materials.
As a disposal alternative, dispose of waste product in a permitted hazardous waste facility.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14:TRANSPORT INFORMATION

ID Number(s):
70-0714-7687-6, 70-0714-9625-4, 70-0714-9971-2

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

This material contains one or more substances which are subject to a TSCA Consent Order or Significant New Use Rule.

Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

This material contains a chemical which requires export notification under TSCA Section 12[b]:

Ingredient (Category if applicable)	C.A.S. No	Regulation	Status
Acetone	67-64-1	Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals	Applicable

Fluorochemical Urethane	Trade Secret	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Applicable

STATE REGULATIONS
Contact 3M for more information.

CHEMICAL INVENTORIES
The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

Contact 3M for more information.

INTERNATIONAL REGULATIONS
Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 2 **Flammability:** 3 **Reactivity:** 0 **Special Hazards:** None
Aerosol Storage Code: 3

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 2 **Flammability:** 3 **Reactivity:** 0 **Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS®) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint and Coatings Association (NPCA).

Revision Changes:
Section 14: ID Number(s) was modified.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

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3M MSDSs are available at www.3M.com

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: SPIC & SPAN

MANUFACTURED BY:
Access Business Group LLC
7575 Fulton Street East
Ada, Michigan 49355

PRODUCT INFORMATION:
Private Label Division
Access Business Group LLC
7575 Fulton Street East
Ada, Michigan 49355

EMERGENCY #: 616-787-6307

INFORMATION #: 616-787-1142

HAZARDOUS INGREDIENTS

(per OSHA Hazard Communication Standard)

% in Product	CAS Number	COMMON NAME Chemical Name
<10		SURFACTANT BLEND
	68131-39-5	Alcohols, C12-15, ethoxylated
	and	
	68439-46-3	Alcohols, C9-11, ethoxylated

PHYSICAL AND CHEMICAL CHARACTERISTICS

pH: 9.5 – 10.5
APPEARANCE AND ODOR: This product is a clear, orange liquid with a pleasant fragrance.

PHYSICAL HAZARD DATA

HAZARDS: This product does not present any physical hazards as defined by the OSHA Hazard Communication standard.

FIRE HAZARDS:

FLASH POINT: This product is not flammable or combustible.

FIRE FIGHTING TECHNIQUES: Standard: Wear full body protection. Wear self-contained breathing apparatus to protect against products of combustion. Use water spray, foam, dry chemical, CO2. Cool containers with water. No explosion hazards identified.

REACTIVITY:

Stability: Stable
Hazardous Polymerization: Will not occur.
Conditions/material to Avoid: Avoid excessive heat, flame, and contact with acids, strong oxidizers.

HEALTH HAZARD DATA

EXPOSURE LIMIT: An exposure limit for this product has not been established.

PRIMARY ROUTES OF EXPOSURE/ENTRY: This product can affect the body if it contacts the skin or eyes, is inhaled or ingested.

SIGNS/SYMPTOMS/EFFECTS OF EXPOSURE:

SKIN CONTACT: The health hazards associated with this product have not been determined. This product contains ingredients that can cause skin irritation. Skin contact with this product should be expected to cause mild to moderate skin irritation.

EYE CONTACT: The health hazards associated with this product have not been determined. This product contains ingredients that can cause eye irritation. Eye contact with this product should be expected to cause mild to moderate eye irritation.

INGESTION: The health hazards associated with this product have not been determined. This product contains ingredients that can cause gastrointestinal irritation. Ingestion of this product should be expected to cause irritation of the mouth and throat, upset stomach, nausea, vomiting, and diarrhea.

INHALATION: The health hazards associated with this product have not been determined. This product contains ingredients that can cause respiratory tract irritation if inhaled. Inhalation of mists of this product should be expected to cause irritation of the nose, throat, and lungs.

AGGRAVATED MEDICAL CONDITIONS: Pre-existing skin, eye, and respiratory disorders.

EMERGENCY AND FIRST AID PROCEDURES

SKIN CONTACT: Remove contaminated clothing and thoroughly rinse skin with water.

EYE CONTACT: Remove contact lenses. Rinse with a gentle stream of lukewarm water for 15 minutes, holding eyelids open. IF IRRITATION DEVELOPS, GET MEDICAL ADVICE by calling the emergency phone number on page one of this MSDS, or a local/regional Poison Control Center, or a hospital emergency room.

INGESTION: If victim is a child, give 4-8 ounces of water. For adults, give 8-12 ounces of water. Do not induce vomiting when this product is swallowed. If vomiting occurs spontaneously, keep victim in an upright position. GET MEDICAL ADVICE by calling the emergency phone number on page one of this MSDS, or a local/regional Poison Control Center, or a hospital emergency room.

INHALATION: Remove to fresh air. If irritation or breathing difficulty develops, GET MEDICAL ADVICE by calling the emergency phone number on page one of this MSDS, or a local/regional Poison Control Center, or a hospital emergency room.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF SPILLED OR RELEASED: Wear appropriate personal protection equipment (respirator, gloves, goggles and/or face shield, boots, protective clothing). Contain/dike spill to prevent environmental release.

WASTE DISPOSAL: Dispose of in accordance with Federal, State and Local regulations.

HANDLING PRECAUTIONS

PROTECTIVE MEASURES: This product is a consumer product. To the extent the product is used in a fashion typical to that of a consumer, protective measures, with the exception of those indicated on the label, are not normally necessary. Where use conditions and/or extent and duration of exposure differ from typical consumer use, however, appropriate protective measures to prevent eye and prolonged skin contact (glasses, goggles, rubber gloves, protective clothing) and minimize inhalation exposure (engineering controls, NIOSH-approved respiratory protection appropriate for the hazard presented) are recommended.

WORK/HYGIENE PRACTICES: For good personal hygiene, insure prompt removal from skin and clothing.

DISCLAIMER

The information contained herein is believed to be accurate and represents the best information currently available to us, much of which comes from the manufacturer or supplier of components of this product. Therefore, Access Business Group LLC makes no warranty, express or implied, regarding the accuracy of the data. Health and safety precautions in this data sheet may not be adequate for all individuals and product uses. It is the user's obligation to make certain that this MSDS is the most current MSDS for the product; to evaluate the information contained in this sheet in connection with the uses to which the product is to be put in the workplace and to use the product safely in accordance with applicable laws and regulations. If there are any questions concerning the information contained in this sheet or its applicability to a particular use, the user is instructed to telephone 1-616-787-7673 (Product Development). Access Business Group LLC assumes no responsibility for injury from the use of the product described in this sheet in a way different from that provided in the label directions.

Commercial Products Group
CPG TN 6
2 Procter & Gamble Plaza
Cincinnati, OH 45202

HMIS®
Health 1
Flammability 2
Reactivity 0

MATERIAL SAFETY DATA SHEET

Issue Date: 3/99

SECTION I

Emergency Telephone Number: 1-513-983-1100
Identity: **Spic and Span Disinfecting All-Purpose Spray and Glass Cleaner Ready-to-Use**
Ingredients/Chemical Name: Cleaning agents (ethanol, butoxypropanol), water, quaternary, colorant and perfume.
Other: N.A.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous ingredients as defined by OSHA, 29 CFR 1910, 1200

Chemical Name	Common Name	CAS No	ACGIH TLV	OSHA PEL	Other Limits Recommended
Ethyl Alcohol	Ethanol	64-17-5	1000 ppm	1000 ppm 1900 mg/m^3	N.K.

DOT Classification: Combustible liquid not regulated in packaging of less than 119 gallons. When shipped in bulk, classified as compounds, cleaning liquid Class 3 (NA 1993)

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling point (°F): 200
Vapor Pressure (mm Hg): N.A.
Vapor Density (Air=1): N.A.
Solubility in Water: Complete
pH: 10.7
Specific Gravity (H_2O=1): 0.99
Percent Volatile by Volume (%): N.A.
Evaporation Rate (nBuOAc=1): N.A.
Appearance and Odor: Light blue liquid, solvent odor

SECTION IV - FLAMMABILITY AND REACTIVITY

Flash Point (Method Used): 135.7°F(cc)
Explosive Limits: *LEL*: N.A. *UEL*: N.A.
Extinguishing Media: Use CO_2, dry chemical, water or "alcohol" foam.
Special Fire Fighting Procedures: Use water to keep fire exposed containers cool.
Unusual Fire Hazards: Combustible liquid. Product will produce a brief flash but will not sustain combustion when in contact with open flame above the indicated flash point.

Stability	*Unstable*:	*Conditions to Avoid*: None Known
	Stable: X	

Incompatibility (Materials to avoid): None Known
Hazardous Decomposition/By Products: None Known

Hazardous	*May Occur*:	*Conditions to Avoid*: None
Polymerization	*Will Not Occur*: X	

SECTION V - HEALTH AND SAFETY DATA

Route(s) of Entry: Eye contact, skin contact, ingestion, inhalation.
Health Hazards (Acute and Chronic): Mild skin, eye and mucous membrane irritant.
Signs and Symptoms of Exposure: Eye contact may result in transient superficial effects similar to those produced by mild toilet soaps. May cause skin irritation. Oral ingestion may result in mild gastrointestinal irritation with nausea, vomiting or diarrhea. Large ingestions may cause temporary dizziness, incoordination and headache.
Medical Conditions Generally Aggravated by Exposure: Use on irritated or extremely dry skin may aggravate the existing conditions.
Emergency and First Aid Procedures: *Eye Contact*: Flush thoroughly with water for 15 minutes. Get medical attention if irritation persists. *Skin Irritation*: Rinse exposed area with soap and water and discontinue use. Get medical attention if irritation persists. *Oral Ingestion*: Dilute with fluids and treat symptomatically. If large amounts are ingested, call a physician. *Inhalation*: If irritated, remove to fresh air.
Other: N.A.

SECTION VI - PRECAUTIONS FOR SAFE HANDLING AND USE

Precautions to be Taken in Handling and Storing: Handling and storage must be well ventilated, cool, and dry. Materials must be isolated from potential sources of ignition.
Other precautions: Keep away from sparks and open flame.
Steps to Be Taken in Case Material is Released or Spilled: Use water spray to dilute and/or wash away spills to avoid exposure and to protect persons working to stop/repair leak.
Waste Disposal Method: Small (household) quantities may be disposed of via sewer. Incineration is preferred where permitted by federal, state and local regulations. Disposal is to be performed in compliance with all regulations.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): None required.
Ventilation *Local Exhaust*: None required *Special*: None
Mechanical (General): Acceptable *Other*: None
Eye Protection: None required with normal use. **Protective Gloves**: None required with normal use.
For splash protection use chemical goggles
Other Protective Equipment: None required. Eye wash fountain desirable.

*N.A. - Not Applicable *N.K. - Not Known

The submission of this MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied is for use only in connection with occupational safety and health.

MATERIAL SAFETY DATA SHEET

PETRA HYGIENIC SYSTEMS
CDN: 86 Moyal Court, Concord, ON L4K 4R8
USA: P.O. Box 18217, Reno NV 89511
(905) 879-0575 (800) 463-2516 Fax: (905) 879-0570
www.petrasoap.com

IDENTITY: BODY REVIVE HAIR GEL – BR 850	**COMMON NAME:** HAIR GEL

EMERGENCY ASSISTANCE: (800) 463-2516 **DATE:** JANUARY 5, 2010

**** THIS IS NOT A CONTROLLED PRODUCT****

1) HAZARDOUS COMPONENTS

(Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits	%(Optional)
Denatured Alcohol	N/A	N/A		
Caromber 940	N/A	N/A		
Polyvinylpyrrolidone	N/A	N/A		
Aloe Vera Gel	N/A	N/A		
Jojoba Oil	N/A	N/A		
Botanical Extracts	N/A	N/A		
Fragrance	N/A	N/A		

2) PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	205°F	**Specific Gravity (H20=1)**	1.05@25°C
Vapour Pressure	As water	**Melting Point**	127°F
Vapour Density	As water	**Evaporating Rate (Butyl Acetate = 1)**	As water
Solubility In Water	Complete		
Appearance & Odour	Clear gel; green apple fragrance.		

3) FIRE & EXPLOSION HAZARD DATA

Flash Point (Method Used)	N/A	**Flammable Limits**	**LEL**	**UEL**
Extinguishing Media	Water, CO2			
Special Fire Fighting Procedures	None			
Unusual Fire & Explosion Hazards	None			

IDENTITY: BODY REVIVE HAIR GEL – BR 850 .

4) REACTIVITY DATA

Stability **Stable** X
Unstable **Conditions to Avoid** None
Incompatibility (Materials to Avoid) None
Hazardous Decomposition or By-products None
Hazardous polymerisation: **May Occur**
Will Not Occur X **Conditions to Avoid** None

5) HEALTH HAZARD DATA

Route(s) of Entry : Inhalation? No **Skin**? Yes **Ingestion?** Minimal
Health Hazards (Acute & Chronic) : Allergic reactions
Carcinogenicity: None **NTP?** **IARC Monographs?** **OSHA Regulated?** No
Signs & Symptoms of Exposure: Burning sensation in eyes on contact, especially prolonged contact. May cause stinging sensation in eyes & open sores or wounds.
Medical Conditions (generally aggravated by exposure) None
Emergency & First Aid Procedures Immediately flush eyes & skin with large amounts of water for at least 15 minutes. Seek medical attention if symptoms persist.

6) PRECAUTIONS FOR SAFE HANDLING & USE

Steps to Be Taken in Case Material is Released or Spilled Clean spill immediately, using absorbent material. Dispose of in labelled waste container for proper disposal. Flush area with water. Follow all local & federal regulations. SPILLS ARE VERY SLIPPERY.
Handling & Storage Store in cool dry place.
Waste Disposal Method Landfill or incinerate in accordance with local & federal regulations.
Other Precautions - None.

7) CONTROL MEASURES

Respiratory Protection (Specify Type) Not required.
Ventilation: Normal **Local Exhaust** **Special**
Mechanical (General) Not required. **Other**
Protective: N/A **Eye Protection** N/A
Other Protective Clothing or Equipment: N/A
Work/Hygienic Practices Wash with soap & water before eating, drinking, smoking or using toilet. Launder contaminated clothing before re-use.

PREPARED BY: **Sam Maduri**

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: Jelmar
Address: 5550 W. Touhy Ave.
Skokie, IL 60077

Emergency Phone Number: 1(800) 323-5497 (USA)
Monday – Friday 8:30 A.M. – 4:30 P.M. CST
Emergency Contact: Chemtrec 1(800) 424-9300

Product Name: Tarn-X Rinse & Wipe
MSDS ID: 901004
Chemical Family: Aqueous acidic surfactant solution
Formula: Proprietary Mixture

SECTION 2 - HAZARDS IDENTIFICATION

PHYSICAL STATE: Liquid
COLOR: Clear, water white to slightly hazy
ODOR: Chemical

EMERGENCY OVERVIEW: Warning! Contains Sulfamic Acid and Thiourea. IRRITATING. TOXIC. HARMFUL OR FATAL IF SWALLOWED. Causes severe burns to eyes, skin and respiratory track.

POTENTIAL HEALTH EFFECTS:
ROUTES OF EXPOSURE: Eyes, Skin, Inhalation and Ingestion.
TARGET ORGANS: Blood, liver, bone marrow, thyroid, reproductive system. Probable carcinogen and mutagen: Thiourea causes cancer in rats. Wash hands thoroughly after use.
EYE CONTACT: Can cause blurred vision, redness, pain, severe tissue pain, and eye damage. Effects may vary depending on length of exposure, solution concentration, and first aid measures.
SKIN CONTACT: Causes skin irritation.
INHALATION: May cause mucous membranes and upper respiratory tract irritation. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
INGESTION: Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause burns to the digestive tract.
CHRONIC EFFECTS: Prolonged or repeated exposure may cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

The International Agency for Research on Cancer (IARC) lists Thiourea as a 2B: Possibly Carcinogenic to Humans. The National Toxicological Program (NTP) lists Thiourea as a Group 2: Reasonably anticipated to be carcinogenic.

MEDICAL CONDITIONS AGGRAVATED BY REPEATED OR PROLONGED EXPOSURE TO THE PRODUCT: Skin, eye, blood, liver, heart, and respiratory system disorders.

DO NOT MIX WITH BLEACH, OR ANY OTHER PRODUCTS AS TOXIC FUMES MAY RESULT. DO NOT STORE WITH FOOD. KEEP OUT OF REACH OF CHILDREN.

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS NUMBER	OSHA Hazard	% by Weight
1. Water	7732-18-5	No	85-95
2. Thiourea	62-56-6	Yes	5 - 7
3. Sulfamic Acid	5329-14-6	Yes	3 – 5
4. Disodium Cocoamphodiproprionate	68604-71-7	No	<1.0
5. Methanol	67-56-1	Yes	<0.05

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: In case of eye contact, immediately rinse eye thoroughly with plenty of water. Remove contact lenses and continue rinsing for at least 15 minutes. Get immediate medical attention.
SKIN CONTACT: Can be irritating to skin, prolonged contact can be more severe, no adverse effects during normal usage. In case of skin contact, rinse area for at least 15 minutes. Remove contaminated clothing and shoes; wash thoroughly before reuse. Get immediate medical attention if irritation persists.
INHALATION: Not a significant route of exposure. Remove to fresh air. If breathing is difficult, GET MEDICAL ATTENTION IMMEDIATELY.
INGESTION: DO NOT induce vomiting. If fully conscious, drink 16 ounces of water. CALL A PHYSCIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER give an unconscious person anything to ingest,

SECTION 5 – FIRE FIGHTING MEASURES

FLAMMABILTY: Not flammable
FLASH POINT: None (104º C / 219º F): Method: TOC
EXPLOSIVE LIMITS IN AIR: Not available
EXTINGUISHING MEDIA: Not flammable. Use appropriate media for area. Water spray, dry chemical, alcohol foam or carbon dioxide,
FIRE FIGHTING METHODS: Evacuate area of personnel. Wear protective NIOSH-approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers. Run-off of large quantities of product from fire control may cause pollution. Contact appropriate agencies.
HAZARDOUS COMBUSTION PRODUCTS: Sulfur and Nitrogen Oxides, Ammonia, Carbon Dioxide and Carbon Monoxide.
FIRE AND EXPLOSION HAZARDS: Large quantities of product may react with some metals, i.e. Aluminum Zinc, and Tin, to release flammable hydrogen gas.

SECTION 6 – ACCIDENTAL RELEASES MEASURES

Steps to be taken in Case Material is Released Spilled: Avoid contact with skin and eyes.
Small Spill: No special clean-up procedure is necessary for small (less than 1 gallon) spills. Flush spill area with water. Wear rubber gloves.
Large Spill: Use personal protection recommended in Section 8. Isolate area and deny entry to unnecessary and unprotected personnel. Dam spill, and absorb with earth, sand or similar material. Place in non-leaking containers. Dispose of collected material according to local, state, and federal regulations. Flush residue with large amount of water. Avoid direct discharge to sewers and surface waters. Report any spill over 25 gallons, if direct discharge to sewers and surface waters has occurred to authorities.

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

SECTION 7- HANDLING AND STORAGE

STORAGE: Contains Sulfamic Acid and Thiourea. Store in cool, well-ventilated area, away from heat. Keep containers tightly closed. Avoid contact with combustible materials, wood, and organic materials. Store in original container in a secure area away from children and pets. DO NOT STORE NEAR FOOD. HANDLING: Avoid contact with eyes, skin or clothing. May be harmful or fatal if swallowed. Use with adequate ventilation. Avoid breathing vapors or mist. Do not eat, drink, or smoke in work area. Wash hand thoroughly after use. Consumer size containers (12 and 16 fluid ounces and gallon containers), should be rinsed and recycled.

Empty 5gallon containers and 55gallon drums, may contain product residue in form of vapor, dried product, or liquid, and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE THESE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY.

DO NOT MIX WITH BLEACH, OR ANY OTHER PRODUCTS AS TOXIC FUMES MAY RESULT. DO NOT STORE WITH FOOD. KEEP OUT OF REACH OF CHILDREN.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

VENTILATION REQUIREMENT: Avoid prolonged breathing mists or dusts of this product. Use with adequate ventilation. Do not use in closed or confined spaces.
RESPIRATORY PROTECTION: If product is used in an industrial setting, respiratory protection must be worn if ventilation does not eliminate symptoms or keep levels below recommended exposure limits. If dust or mist is present, wear NIOSH-Approved respirator for mists and dusts, NIOSH-Approved self-contained breathing apparatus, NIOSH-Approved full-facepiece positive-pressure, air-supplied respirator. DO NOT exceed limits established by respirator manufacturer. Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of product.
EYE PROTECTION: Not required during normal household usage. Industrial users wear safety goggles. Do not wear contact lenses. Emergency responders should wear full eye and face protection.
SKIN PROTECTION: Rubber gloves with protective cuff. Emergency responders should wear impermeable gloves.
OTHER PROTECTION: Emergency responders should wear chemical type (impermeable) protective clothing and footwear, where direct contact with chemicals in this product is possible.
WORK/HYGIENIC PRACTICES: Wash thoroughly with soap and water after use or handling.

EXPOSURE GUIDELINES:	**OSHA**		**ACGIH**	
COMPONENT	**PEL**	**STEL/C**	**TWA**	**STEL/C**
1. Water	N.E.	N.E.	N.E.	N.E.
2. Thiourea	N.E.	N.E.	N.E.	N.E.
3. Sulfamic Acid	N.E.	N.E.	N.E.	N.E.
4. Disodium Cocoamphodiproprionate	N.E.	N.E.	N.E.	N.E.
5. Methanol	200ppm	N.E.	s 200ppm	s 250ppm
	s 200 ppm + s 250ppm +			

(s) – Skin
N.E. – Not Established

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Boiling point:	103º C / 217º F	**Specific Gravity:**	1.029 - 1.049
Freezing Point (ºF):	N.D.	**Percent Volatiles:**	(WT%)~90 (Calculated)
Melting Point (ºF):	N.D.	**Evaporation Rate:**	N.D. (n-ethyl acetate=1)
Vapor Pressure (MM HG):	N.D.	**Solubility in Water:**	Soluble
Vapor Density:	N.D.	**VOC (WT%):**	<0.06 (Calculated)
pH:	0.85 - 1.05	**VOC (LBS/GAL):**	<005 (Calculated)

SECTION 10 – STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.
CONDITIONS TO AVOID: Avoid elevated temperatures.
INCOMPATIBLE MATERIALS: Strong oxidizers, nitric acid, chlorine, acrolein, acrylaldehyde, strong bases, and hydrogen peroxide.
HAZARDOUS DECOMPOSITION PRODUCTS: May emit ammonia and oxides of sulfur, nitrogen, and carbon.
POSSIBILITY OF HAZARDOUS REACTIONS: May occur when in contact with acrylaldehyde.

SECTION 11 – TOXICOLOGICAL INFORMATION

ACUTE ORAL EFFECTS: A dose of 5g / kg body weight was given to 5 male and 5 female rats; 10% mortality occurred within 14 days. The acute oral LD50 found to be > 5 g/kg. The product is not toxic by oral ingestion in accordance with FHSA / CPSC Guidelines.
SKIN EFFECTS: Slightly irritating to rabbit skin. Draize Score: 0.71 out of 8.00.
INHALHATION: N. E.

SECTION 12- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.
CHEMICAL FATE INFORMATION: 28-day biodegradation = 60%. The matter is biodegradable.

SECTION 13- DISPOSAL CONSIDERATIONS

HAZARDOUS WASTE NUMBER: D002
DISPOSAL METHOD: Dispose of in a permitted hazardous waste management facility following all local, state, and federal regulations.

DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION.

Follow label warnings, since containers may retain some reside of the product. Processing, use or contamination of this product may change the waste management options. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. State and local disposal regulations may differ from federal disposal regulations.

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

SECTION 14 - TRANSPORTATION INFORMATION

The following Transportation Information applies only to 12 fl oz, 16 fl oz, and 128 fl oz (1 Gallon) packaging:
DOT (Department of Transportation Proper Shipping Name): ORM-D
DOT Identification Number: N.A.
Packaging Group: N.A.

The following Transportation Information applies to 5gallon containers and 55gallon drums:
DOT Proper Shipping Name: Corrosive Liquid, Toxic, N.O.S. (Contains Sulfamic Acid, Thiourea)
Hazard Class: 8
Identification Number: UN2922
Packaging Group: III
Label Required: Corrosive, Toxic
Reportable Quantity (RQ): 10# Thiourea
TDG Classification: Corrosive Liquid, Toxic, N.O.S. (Contains Sulfamic Acid, Thiourea) Class 8, UN2922, PG III
IMDG Classification: Corrosive Liquid, Toxic, N.O.S. (Contains Sulfamic Acid, Thiourea) Class 8, UN2922, PG III, U219
IATA Classification: Passenger – NO; Cargo – YES; Packaging Instructions 820 [12fl oz, 16fl oz, and 128fl oz (1 Gallon) packaging]
WHIMS (Canada): DIA, D1B, and D2A. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by CPR.

SECTION 15 – REGULATORY INFORMATION

FEDERAL REGULATIONS:
TSCA INVENTORY STATUS: All components of this product are listed on the EPA/TSCA Inventory of Chemical Substances.
SARA TITTLE III SECTION 311/312 CATEGORY:

IMMEDIATE (ACUTE) HEALTH HAZARARD:	YES
DELAYED (CHRONIC) HEALTH HAZARD:	YES
FIRE HAZARD:	NO
SUDDEN RELEASE OF PRESSURE:	NO
REACTIVE HAZARD:	NO

SARA SECTIONS302/304/313/HAP:

COMPENT	**RQ (LDS)** (1*)	**RQ (LBS)** (2*)	**TPQ (LBS)** (3*)	**SEC 313** (4*)	**HAP** (5*)
1. Water:	N.A.	N.A.	N.A.	NO	NO
2. Thiourea:	10	N.A.	N.A.	YES	NO
3. Sulfamic Acid:	N.A.	N.A.	N.A.	NO	NO
4. Disodium Cocoamphodiproprionate:	N.A.	N.A.	N.A.	NO	NO
5. Methanol:	5,000	N.A.	N.A.	YES	YES

JELMAR
MATERIAL SAFETY DATA SHEET
TARN-X TARNISH REMOVER

REGULATORY AGENCIES

*1: CERCLA Reportable Quantity
*2: SARA reportable Quantity
*3: SARA EHS Threshold Planning Quantity
*4: SARA 313 Toxic Chemical/Category
*5: U. S. EPA Hazardous Air Pollutant

INTERNATIONAL CHEMICAL INVENTORY STATUS:

EUROPEAN UNION (EINECS)	YES
JAPAN (METI)	YES
AUSTRALIA (ACIS)	YES
KOREA (KECL)	YES
CANADA (DSL)	YES
CANADA (NDSL)	NO
PHILAPINES	YES

STATES RIGHT TO KNOW: California, New Jersey, Pennsylvania, Minnesota, Massachusetts, and Wisconsin.

The following statement is made in order to comply with the California State Drinking Water Act. California Proposition 65: This product contains Thiourea known to the State of California to cause cancer and/or to cause birth defects and other reproductive harm.

SECTION 16 – OTHER INFORMATION

NFPA Rating System: Health-2 Flammability-0 Reactivity-0
Precautions to be taken in Handling and Storing: Avoid exposure to excess heat and prevent from freezing.
Other Precautions: None required.
MSDS ABBREVIATIONS:
N. A.: Not Applicable
N. D.: Not Determined
N.E.: Not Established
C: Ceiling Limit
HAP: Hazardous Air Pollutant
VOC: Volatile Organic Compound

Revision: Format Change ANSI Z400.1-2004 October 2004 R. A. Gaudreault

Material Safety Data Sheet

Zep Inc.
1310 Seaboard Industrial Blvd.
Atlanta, GA 30318
1-877-I-BUY-ZEP (428-9937)
www.zep.com

Section 1. Chemical Product and Company Identification

Product name **ZEP 45**

Product use Aerosol Lubricant

Product code **0174**

Date of issue **03/19/09** **Supersedes 04/26/07**

Emergency Telephone Numbers

For MSDS Information:
Compliance Services 1-877-I-BUY-ZEP (428-9937)

For Medical Emergency
(877) 541-2016 Toll Free - All Calls Recorded

For Transportation Emergency
CHEMTREC: (800) 424-9300 - All Calls Recorded
In the District of Columbia (202) 483-7616

Printing date: 03/19/09

Prepared By
Compliance Services
1420 Seaboard Industrial Blvd.
Atlanta, GA 30318

Section 2. Hazards Identification

Emergency overview

*Hazard Determination System (HDS): Health, Flammability, Reactivity

2	1	0

WARNING !

CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
VAPOR HARMFUL. CONTENTS UNDER PRESSURE.

NOTE: MSDS data pertains to the product as delivered in the original shipping container(s). Risk of adverse effects are lessened by following all prescribed safety precautions, including the use of proper personal protective equipment.

Acute Effects **Routes of Entry** Dermal contact. Inhalation.

Eyes Causes eye irritation. Inflammation of the eye is characterized by redness, watering and itching.

Skin Causes skin irritation. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.

Inhalation Avoid inhalation of vapor, spray or mist. Over-exposure by inhalation may cause respiratory irritation. Can cause central nervous system (CNS) depression. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness.

Ingestion Aspiration hazard if swallowed. Can enter lungs and cause damage.

Chronic effects Repeated or prolonged exposure to the substance can produce damage to central nervous system, peripheral nervous system, kidneys, liver and heart. May cause hearing impairment or change. Prolonged skin contact may cause dermatitis with drying and cracking of skin.

Carcinogenicity Trichloroethylene: Classified + (Proven) by OSHA. Classified Group 2A (Probable for Human) by IARC. Group 2 (Reasonably Anticipated To Be Human Carcinogen) by NTP.

Additional Information: See Toxicological Information (Section 11)

Section 3. Composition/Information on Ingredients

TRICHLOROETHYLENE; acetylene trichloride; 1-chloro-2,2-dichloroethylene	79-01-6	40 - 50
PARAFFIN OIL; blend of heavy and light naphthenic petroleum distillate	64742-52-5	15 - 25
MINERAL SEAL OIL; mineral oil; petrolatum	64742-30-9	5 - 15
DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	112-34-5	1 - 5
CARBON DIOXIDE	124-38-9	1 - 5

Section 4. First Aid Measures

Eye Contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Skin Contact Wash affected area with soap or mild detergent and water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Get medical attention if irritation develops.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

National Fire Protection Association (U.S.A.)

Flash Point Not applicable.

Flammable Limits Not applicable.

Flammability Non-flammable. (CSMA)

Fire hazard CONTENTS UNDER PRESSURE. Container explosion may occur under fire conditions or when heated. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

Fire-Fighting Procedures Use dry chemical or CO_2. Cool closed containers exposed to fire with water. Wear special protective clothing and positive pressure, self-contained breathing apparatus.

Section 6. Accidental Release Measures

Spill Clean up Large spills are unlikely due to packaging.

Section 7. Handling and Storage

Handling Put on appropriate personal protective equipment (see section 8). Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Use only with adequate ventilation. Watch for accumulation in low confined areas.

Storage Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Do not store above the following temperature: 49°C (120.2°F). Do not puncture or incinerate container. Keep out of the reach of children.

Section 8. Exposure Controls/Personal Protection

Product name	Exposure limits
TRICHLOROETHYLENE; acetylene trichloride; 1-chloro-2,2-dichloroethylene	**ACGIH TLV (United States).** TWA: 10 ppm 8 hour(s). STEL: 25 ppm 15 minute(s). **OSHA PEL (United States).** TWA: 50 ppm 8 hour(s). STEL: 200 ppm 15 minute(s).
PARAFFIN OIL; blend of heavy and light naphthenic petroleum distillate	**OSHA PEL (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Mist **ACGIH TLV (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Mist
MINERAL SEAL OIL; mineral oil; petrolatum	**OSHA PEL (United States).** : 5 mg/m³ 8 hour(s). Form: Mist **ACGIH TLV (United States).** : 5 ppm 8 hour(s). Form: Mist
DIETHYLENE GLYCOL MONOBUTYL ETHER; 2-(2-butoxyethoxy)-ethanol; butyl carbitol	**Manufacturer (United States).** TWA: 35 ppm 8 hour(s).
CARBON DIOXIDE	**ACGIH TLV (United States).** TWA: 5000 ppm 8 hour(s). STEL: 30000 ppm 15 minute(s).

Personal Protective Equipment (PPE)

Eyes Recommended: Safety glasses.

Body Recommended: Chemical-resistant gloves. Viton

Respiratory Use with adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

Section 9. Physical and Chemical Properties

Physical State Liquid. (Aerosol.)

pH Not applicable.

Boiling Point 87.22°C (189°F)

Specific Gravity 1.095

Solubility Insoluble in the following materials: cold water and hot water.

Color Brown. Oily liquid.

Odor Sweet. [Strong]

Vapor Pressure Not available.

Vapor Density Not available.

Evaporation Rate <1 (Carbon tetrachloride = 1)

VOC (Consumer) 50.0% 4.60 (lb/gal) 551 (g/l).

Section 10. Stability and Reactivity

Stability and Reactivity The product is stable.

Incompatibility Reactive or incompatible with the following materials: oxidizing materials, metals and alkalis.

Hazardous Polymerization Will not occur.

Hazardous Decomposition Products Carbon dioxide, carbon monoxide, Hydrogen chloride (HCl), Chlorine and Phosgene gas.

Section 11. Toxicological Information

Acute Toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Trichloroethylene	LD50 Dermal	Rabbit	10000 mg/kg	-
	LD50 Oral	Rat	4920 mg/kg	-
	LD50 Oral	Mouse	2402 mg/kg	-
Diethylene Glycol Monobutyl Ether	LD50 Dermal	Rabbit	2700 mg/kg	-
	LD50 Oral	Rat	5660 mg/kg	-
	LD50 Oral	Mouse	2400 mg/kg	-

Section 12. Ecological Information

Aquatic Ecotoxicity

Not available.

Section 13. Disposal Considerations

Waste Information

Waste must be disposed of in accordance with federal, state and local environmental control regulations. Consult your local or regional authorities for additional information.

Waste Stream Code: D040
Classification: - [Hazardous waste.]
Origin: - [RCRA waste.]

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
DOT Classification	None.	Consumer commodity ORM-D			
IMDG Class	Not determined.				

NOTE: DOT classification applies to most package sizes. For specific container size classifications or for size exceptions, refer to the Bill of Lading with your shipment.
PG* : Packing group

Section 15. Regulatory Information

U.S. Federal Regulations

SARA 313 toxic chemical notification and release reporting:

Product name

Trichloroethylene
Diethylene Glycol Monobutyl Ether

Clean Water Act (CWA) 307: Trichloroethylene (RQ 100 lbs.)

Clean Water Act (CWA) 311: Trichloroethylene (RQ 100 lbs.)

Clean Air Act (CAA) 112 regulated toxic substances: Trichloroethylene; Diethylene Glycol Monobutyl Ether

All Components of this product are listed or exempt from listing on TSCA Inventory.

State Regulations

California Prop 65 **WARNING:** This product contains a chemical or chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.: Trichloroethylene

Section 16. Other Information

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**NOTE: Hazard Determination System (HDS) ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although these ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HDS ratings are to be used with a fully implemented program to relay the meanings of this scale.*

CLEAN ACROSS AMERICA AND THROUGHOUT THE WORLD™

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301
1-877-I-BUY-ZEP (1-877-428-9937)

MATERIAL SAFETY DATA SHEET
AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 04/07/95

SUPERSEDES: 06/22/93 Date printed: 06/02/00

ZEP STAINLESS STEEL CLEANER
Product No: 0143 Aerosol Stainless Steel Cleaner and Polis

SECTION I -EMERGENCY CONTACTS

TELEPHONE:
(404) 352-1680 *BETWEEN 8:00 AM - 5:00 PM (EST)*
MEDICAL EMERGENCY:
(770) 439-4200 *NON OFFICE HOURS, WEEKENDS*
(770) 432-2873 *AND HOLIDAYS, PLEASE CALL YOUR*
(770) 455-8160 LOCAL POISON CONTROL
(770) 552-8836
(770) 424-2048
(770) 424-4789
TRANSPORTATION EMERGENCY:
(770) 922-0923
CHEMTREC:
(800) 424-9300 TOLL FREE - ALL CALLS RECORDED
DISTRICT OF COLUMBIA:
(202) 483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS	(PPM)	EFFECTS (SEE NOTICE)	% IN PROD.
** PARAFFIN OIL ** blend of heavy and light naphthenic petroleum distillate; CAS# 64742-52-5; RTECS# NONE; OSHA PEL - N/D; ACGIH OIL MIST LIMIT= 5mg/m3	N/D	IRR	60-70
** PETROLEUM SPIRITS ** vm&p naphtha; refined solvent naphtha; CAS# 8032-32-4; RTECS# O16180000; OSHA PEL- 300 PPM; OSHA STEL-400 PPM	300	FBL CNS IRR	10-20
** D-LIMONENE ** orange distillate; citrus terpene; cyclohexene, 1-methyl-4-(1-methylethenyl)-, (R)-; CAS# 5989-27-5; RTECS# GW6360000; OSHA PEL N/D	N/D	CBL SEN	5-10
** ISOPROPYL ALCOHOL ** ipa; dimethylcarbinol; 2-propanol; CAS# 67-63-0; RTECS# NT8050000; OSHA PEL-400 PPM; OSHA/ACGIH STEL-500 PPM	400	IRR FBL	< 5

SECTION III - HEALTH HAZARD DATA

SPECIAL NOTE: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

ACUTE EFFECTS OF OVEREXPOSURE:
The solvents in this product, when inhaled or absorbed through the skin in harmful quantities, may produce central nervous system depression characterized by headache, nausea, dizziness and stupor. Vapors or spray mists may be irritating to nasal and respiratory tract. Product may be irritating to skin and eyes resulting in redness, itching or burning. Introduction of solvents, as in aspiration of vomitus fluid, may produce chemical pneumonia. Existing respiratory disorders and skin diseases may be aggravated by exposure. Existing respiratory disorders or skin diseases may be aggravated by exposure.

CHRONIC EFFECTS OF OVEREXPOSURE:
Skin which is repeatedly defatted by contact with this product may be more susceptible to irritation, infection, or dermatitis.

None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

EST'D PEL/TLV: Not established PRIMARY ROUTES OF ENTRY: Inh.

HMIS CODES: HEALTH 1; FLAM. 2; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. NO

FIRST AID PROCEDURES:
SKIN: Wash contaminated skin thoroughly with soap or a mild detergent. Apply a skin cream with lanolin. Get medical attention if irritation persists.
EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.
INHALE: Move exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Get medical attention immediately.
INGEST: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING: Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.
EYE PROTECTION: Wear splash-proof safety goggles especially if contact lenses are worn.
RESPIRATORY PROTECTION: In the unlikely event that exposure levels exceed the PEL/TLV, use an

(Continued on Page: 2)

Product No: 0143 **SECTION IV - SPECIAL PROTECTION INFORMATION (continued)**

organic vapor respirator (eg Zep 2211).
VENTILATION: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

BOILING POINT (F):	180	SPECIFIC GRAVITY:	
VAPOR PRESSURE(mmHg):	N/D	EVAPORATION RATE (N/D=1):	N/D
VAPOR DENSITY(AIR=1):	N/D	pH(CONCENTRATE):	N/A
SOLUBILITY IN WATER:	NEGLIGIBLE	pH(USE DILUTION OF):	N/A

VOC CONTENT (CONCENTRATE):
APPEARANCE AND ODOR: An amber liquid with an orange fragrance.

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): Flammable (CSMA)
FLAMMABLE LIMITS: LEL: N/A UEL: N/A
EXTINGUISHING MEDIA: Carbon dioxide, dry chemical and foam.
SPECIAL FIRE FIGHTING: Wear self-contained positive pres. breathing apparatus.
UNUSUAL FIRE HAZARDS: Direct water onto intact containers to prevent bursting.

SECTION VII - REACTIVITY DATA

STABILITY: Stable
INCOMPATIBLILITY(AVOID): Heat, flame, spark, strong alkalis, and/or oxidizers.
POLYMERIZATION: Will not occur.
HAZARDOUS DECOMPOSITION: Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Observe safety precautions in sections 4 & 9 during spill clean-up. Large spills are unlikely due to packaging. Spill may be absorbed on an inert absorbent material (eg Zep-O-Zorb), and placed in a suitable container for disposal. Wash area thoroughly with a detergent solution and rinse well with water.
WASTE DISPOSAL METHOD:
Product is consumed in use. Do not crush, puncture or incinerate spent containers. Large numbers of aerosol containers may require handling as a hazardous waste, but in most states total hazardous waste quantities less than 220 lbs per month may allow disposal in a chemical or industrial waste landfill. Consult local, state and federal agencies for the proper disposal method in your area.
RCRA HAZ. WASTE NOS.: D001

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:
Do not store at temperatures above 120F (39C) or in direct sunlight. Do not puncture or incinerate container.
Keep product away from skin and eyes.
Do not breathe spray mists or vapors.
Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned.
Keep out of the reach of children.

SECTION X - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: CONSUMER COMMODITY,
NOTE: DOT information applies to larger package sizes of affected products. For some products, DOT may require alternate names and labeling in accordance with packaging group requirements.
DOT HAZARD CLASS: ORM-D DOT PACKING GROUP: N/A
DOT I.D. NUMBER: N/A DOT LABEL/PLACARD: ORM-D
EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED
EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER):

(Continued On Page 3)

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS LISTED ALPHABETICALLY BY SECTION

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.
CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances.
CBL: Combustible - At temperatures between 100F and 200F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.
CNS: Central Nervous System depressant which reduces the activity of the brain and spinal cord.
COR: Corrosive - Causes irreversible injury to living tissue (e.g. burns).
DESIGNATIONS: Chemical and common names of hazardous ingredients.
EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.
EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PELs (TWA, STEL and ceiling limits).
- ACGIH: American Conference of Governmental Industrial Hygienists.
- CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.
- OSHA: Occupational Safety and Health Administration
- PEL: Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.
- PPM: Parts per million - unit of measure for exposure limits.
- (S) SKIN: Skin contact with substance can contribute to overall exposure.
- STEL: Short Term Exposure Limit - Maximum concentration for a continuous 15-minute exposure period.
- TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.
HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards based on the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200
HTX: Highly toxic - the probable lethal dose for a 70kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).
IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.
N/A: Not Applicable - Category is not appropriate for this product.
N/D: Not Determined - Insufficient information to make a determination for this item.
RTECS#: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.
SARA: Superfund Amendment and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.
SEN: Sensitizer - Causes allergic reaction after repeated exposure.
TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

(rev. 1/98)

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.
EST D PEL/TLV: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.
HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. The presence of a chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.
PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.
- ING: Ingestion - A primary route of exposure through swallowing of material
- INH: Inhalation - A primary route of exposure through breathing of vapors.
- SKIN: A primary route of exposure through contact with the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.
MSHA: Mine Safety and Health Administration
NIOSH: National Institute for Occupational Safety and Health

SECTION V: PHYSICAL DATA

EVAPORATION RATE: Refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).
pH; A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)
VOC CONTENT: The percentage or amount in pounds per gallon of the product that is regulated as a Volatile Organic Compound under the Clean Air Act of 1990 and various state jurisdictions.
SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition by extreme heat or fire.
INCOMPATIBILITY: Material contact by extreme heat and the conditions to avoid to prevent hazardous reactions.
POLYMERIZATION: Indicates the tendency of the product's molecules to combine with themselves in a chemical reaction, releasing excess pressure and heat.
STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act- Federal Law which regulates chemical releases to bodies of water.
RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.
TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with out products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the products label and Material Safety Data Sheet.

MSDS Number: 000000000205

SUSPEND® SC INSECTICIDE

MSDS Version 1.2

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name	SUSPEND® SC INSECTICIDE
Chemical Name	
Synonym	
MSDS Number	205
Chemical Family	Mixture
Chemical Formulation	Mixture
EPA Registration No.	432-763
Canadian Registrat. No.	

Bayer Environmental Science
95 Chestnut Ridge Road
Montvale, NJ 07645
USA

For Product Use Information: (800)331-2867 Monday through Friday(CRLF) 8:00AM-4:30PM(CRLF) For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day(CRLF) For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS No.	Concentration % by Weight	
		Minimum	Maximum
Deltamethrin	52918-63-5	4.7500	
Inert ingredients		95.2500	

SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview	Caution. Keep out of the reach of children. Harmful if inhaled. Contact with product may result in transient tingling and reddening of the skin. This product is extremely toxic to fresh water and estuarine fish and invertebrates.
Physical State	liquid
Odor	odorless
Appearance	white

Routes of Exposure	Inhalation.
Immediate Effects	
Eye	May cause slight irritation.
Skin	Contact with product may result in transient tingling and reddening of the skin.
Inhalation	Harmful if inhaled.
Signs and Symptoms	Acute overexposure may result in respiratory irritation and transient paresthesia. Chronic overexposure produced pale kidneys and discoloration of the lungs in rats.

SECTION 4. FIRST AID MEASURES

Inhalation	Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. Get medical attention.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point	> 93 °C / > 199 °F
Suitable Extinguishing Media	carbon dioxide (CO2), dry chemical, foam, water
Fire Fighting Instructions	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal	Soak up with an absorbent material such as sand, sawdust, earth, fuller's earth, etc. Dispose of with chemical waste.

SECTION 7. HANDLING AND STORAGE

Handling Procedures	Avoid breathing vapors and spray mist.
Storing Procedures	Do not contaminate water, food, or feed by storage or disposal. Mix as needed. Store in original container in a secured, dry storage area. Avoid exposure to extreme temperatures. Prevent cross-contamination with other pesticides and fertilizers.
Work/Hygienic Procedures	Wash with soap and water after handling. Remove and wash contaminated clothing before re-use.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye/Face Protection	safety glasses or goggles
Body Protection	Long-sleeved shirt and long pants impervious gloves
Exposure Limits	None Established

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	white
Physical State	liquid
Odor	odorless
pH	6.6 in suspension
Specific Gravity	1.05 at 20 °C
Solubility (in water)	Suspends

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Conditions to Avoid	Keep away from sources of ignition.
Incompatibility	strong reducing agents strong oxidizing agents
Hazardous Products of Decomposition	Decomposition Type: thermal carbon dioxide (CO2) carbon monoxide

Hazardous Polymerization (Conditions to avoid)	Will not occur

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	Rat: LD50: > 15,000 mg/kg
Acute Dermal Toxicity	Rabbit: LD50: > 10,000 mg/kg
Acute Inhalation Toxicity	Rat: LC50: > 1.02 mg/l 4 h Rat: LC50: > 4.08 mg/l 1 h for DOT purposes
Skin Irritation	Rabbit: Slightly irritating
Eye Irritation	Rabbit: Very slightly irritating.
Sensitization	Guinea pig: Negative
Chronic Toxicity	Deltamethrin technical is not carcinogenic based on animal studies.

Assessment Carcinogenicity

ACGIH
None
NTP
None
IARC

Deltamethrin	52918-63-5	3

OSHA
None

Reproductive & Developmental Toxicity	Deltamethrin is not considered to be a reproductive toxin based on animal studies.
Teratogenicity	Deltamethrin is not considered to be teratogenic based on animal studies.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions	This product is extremely toxic to fresh water and estuarine fish and invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Use with care when applying in areas adjacent to any body of water. Do not contaminate water when disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment or residues

remaining on the treated areas. Do not apply this product or allow drift when bees are actively visiting the treatment area. Do not apply it or allow it to drift to crops or weeds on which bees are actively foraging.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance

Pesticide Disposal: Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal

Container One Gallon and Smaller: Wrap container in several layers of newspaper and discard in trash.

Non-refillable Container: Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

Refillable Container: Replace the dry disconnect cap if applicable, and seal all openings which have been opened during use. Return empty container to a collection site designated by Bayer. If container has been damaged and cannot be returned according to the recommended procedures, contact Bayer to obtain proper handling instructions.

RCRA Classification

Not Regulated under this Statute

SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: Not DOT regulated

SECTION 15. REGULATORY INFORMATION

US Federal

EPA Registration No. 432-763

TSCA list

None

TSCA 12b export notification

None

SARA Title III - section 302 - notification and information

None

SARA Title III - section 313 - toxic chemical release reporting

None

US States Regulatory

CA Prop65

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State right-to-know ingredients

None

Canadian Regulations

Canadian Registrat. No.

Canadian Domestic Substance List

None

Environmental

CERCLA

None

Clean Water Section 307 Priority Pollutants

None

Safe Drinking Water Act Maximum Contaminant Levels

None

International Regulations

EU Classification

Deltamethrin	52918-63-5	Toxic Dangerous for the environment
R Phrases	Also toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	
S Phrases	Keep locked-up and out of the reach of children. Avoid contact with the skin. After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.	

European Inventory of Existing Commercial Substances (EINECS)

Deltamethrin	52918-63-5

SECTION 16. OTHER INFORMATION

	Health	Flammability	Reactivity	Others
HMIS	1	1	0	B
NFPA	1	1	0	

REVISED SECTIONS:
MSDS REVISION INDICATOR: Company name change.

Print Date: 12/09/2002
Supersedes MSDS, which is older than: 12/09/2002

Appendix C

Data Validation Report

Phoenix Chemistry Services

May 16, 2011

Nadine Weinberg
ARCADIS, U.S., Inc.
482 Congress Street, Suite 501
Portland, ME 04101

Reference #: 2011-0510-001

Dear Nadine,

Enclosed please find the results of the data validation of Sample Delivery Group No. L1105581 from the Indoor Air Quality/Vapor Intrusion (IAQ/VI) assessment work at a residential property in Woburn, MA. The indoor and outdoor air and sub-slab vapor samples in SDG No. L1105581 were collected on April 21 - 22, 2011. The laboratory analyses were performed by Alpha Analytical Laboratories, Inc. of Mansfield, MA.

The data package and an electronic deliverable were received on May 10, 2011, and a separate data package for the canister certifications (SDG No. L1105086), and two supplemental files L1105581A.pdf and L1105581B.pdf, were also received on May 10, 2011. The validation has been performed by Phoenix Chemistry Services according to the Tier III guidelines as defined by USEPA Region I, as presented in "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses", December, 1996. The EPA's National Functional Guidelines for Organic Data Review (EPA 540/R-99/008, October, 1999), the IAQ/VI Quality Assurance Project Plan (QAPP), and the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010) were also considered during the evaluation, and professional judgment was applied as necessary and appropriate. Data qualifiers have been applied in the final validation report as necessary and appropriate, in accordance with these guidelines.

Thank you for this opportunity to provide data validation services to ARCADIS. We look forward to continuing to work with you on this and other projects. If there are any questions or concerns about the material in this report, please do not hesitate to contact me for help and clarification.

Sincerely,

Deborah H. Gaynor, Ph.D.
Principal, Phoenix Chemistry Services

DATA VALIDATION

FOR

UniFirst-Woburn Vapor Intrusion Assessment
Woburn, MA

ORGANIC ANALYSIS DATA
Selected Volatiles in Air Samples

Sample Delivery Group (SDG) No.
L1105581

Chemical Analyses Performed by:

Alpha Analytical Laboratories, Inc.
320 Forbes Blvd.
Mansfield, MA 02048

FOR

ARCADIS U.S., Inc.
482 Congress Street, Suite 501
Portland, ME 04101

Data Validation Report by:

Phoenix Chemistry Services
126 Covered Bridge Rd.
N. Ferrisburg, VT 05473
(802) 233-2473
May 19, 2011

Reference #2011-0510-001
VOA Air Validation Report/L1105581_7O/dhg

EXECUTIVE SUMMARY

Phoenix Chemistry Services (Phoenix) has completed the validation of the Method TO-15 Selected Ion Monitoring (SIM) volatiles in air analysis data prepared by Alpha Analytical Laboratories of Mansfield, MA, for 6 air samples and one (1) trip blank (TB) from a residential property in Woburn, MA. The laboratory reported the data under Sample Delivery Group (SDG) No. L1105581, which was submitted as a single data package received by Phoenix on May 10, 2011, and includes the following samples:

Sample Location	Sample ID	Laboratory ID
AA-57O-1	OA-01	L1105581-01
IA-7O-1	IA-01	L1105581-02
IA-7O-2	IA-02	L1105581-03
IA-7O-3	IA-03	L1105581-04
Field QC	TRIP BLANK	L1105581-08
SS-7O-1	SS-1	L1105581-09
SS-7O-2	SS-2	L1105581-10

A cross-reference table of sample IDs was provided in the data package. The Sample Location name is being presented in this sample list to aid in identifying project samples with non-unique Sample IDs. The location name will be given as needed in this report to maintain clarity. A separate data package, L1105086, containing the supporting documentation (clean can certifications) for the preparation and analysis of the sampling canisters, and two files (L110581A.pdf and L110581B.pdf), containing the raw data for the vacuum check upon receipt and the flow controller rate checks, were also submitted on May 10, 2011.

The samples in this data set represent the indoor air and the sub-slab soil vapor samples (matched to the indoor sampling locations) collected from April 21 to 22, 2011 in Woburn, MA inside a residential building, and an ambient air sample collected outdoors at the sample location. All samples were kept in the engineer's custody after sampling until hand-delivered by laboratory courier to the laboratory on April 25, 2011.

Findings of the validation effort resulted in the following qualifications of sample results:

- Results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

- Positive results for naphthalene greater than the sample-specific (adjusted) QL but less than the action limit in samples IA-01 (location IA-7O-01) and IA-02 (IA-7O-02) were qualified as less than the reported value (U).

- The result for xylenes (total) in SS-1 (SS-7O-1) was qualified as estimated (J).

- The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers.

The Overall Evaluation of Data (Section XVI) summarizes the validation results. The validation findings and conclusions for each analytical parameter are detailed in the remaining sections of this report.

Documentation problems observed in the data package are described in Section XVII.

This validation report shall be considered part of the data package for all future distributions of TO - 15 SIM (volatiles in air) analysis data for SDG No. L1105581.

INTRODUCTION

Analyses of selected volatiles in air samples were performed according to Method TO-15, as modified for Selected Ion Monitoring (SIM) in the laboratory standard operating procedure (SOP) No. A-001, and in accordance with requirements in the Quality Assurance Project Plan (QAPP) for Indoor Air Quality and Vapor Intrusion Assessment, Rev. 2, March, 2010. The target compound list was limited to the compounds listed in Form K of the QAPP, and reporting limits are as specified there.

Tentative identification of non-target analyte peaks (i.e., tentatively identified compounds, or TICs) was not requested for these analyses.

Phoenix's validation was performed in conformance with Tier III guidelines as defined by USEPA Region I. Data qualifiers are applied as necessary and appropriate. To the extent possible, the data were evaluated in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses", December, 1996. EPA's National Functional Guidelines for Organic Data Review (EPA 540/R-94/012, 2/94) and the QAPP were also considered during the evaluation, and professional judgment was applied as necessary and appropriate.

The data validation process evaluates data on a technical basis for chemical analyses conducted under the USEPA Contract Laboratory Program (CLP) or other well-defined methods. Contract compliance is evaluated only in specific situations. Issues pertaining to contractual compliance are noted where applicable. It is assumed that the data package is presented in accordance with the CLP requirements. It is also assumed that the data package represents the best efforts of the laboratory and has already been subjected to adequate and sufficient quality review prior to submission for validation.

Results of sample analyses are reported by the laboratory as either qualified or unqualified; various qualifier codes are used by the laboratory to denote specific information regarding the analytical results. During the validation process, laboratory data are verified against all available supporting documentation. Based on this evaluation, qualifier codes may be added, deleted or modified by the data validator. Raw data is examined in detail to check calculations, compound identification, and/or transcription errors. Validated results are either qualified or unqualified; if results are unqualified, this means that the reported values may be used without reservation. Final validated results are annotated with the following codes, as defined in the EPA Region I Functional Guidelines:

U - The analyte was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. The sample quantitation limit accounts for sample specific dilution factors and percent solids corrections or sample sizes that deviate from those required by the method.

J - The associated numerical value is an estimated quantity.

UJ - The analyte was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

R - The data are unusable (analyte may or may not be present). Resampling and reanalysis is necessary for verification. The R replaces the numerical value or sample quantitation limit.

In some instances (e.g., a dilution) a result may be indicated as "rejected" to avoid confusion when a more quantitatively accurate result is available.

EB, TB, BB - An analyte that was identified in an aqueous equipment (field) blank, trip blank, or bottle blank that was used to assess field contamination associated with soil/sediment samples. These qualifiers are to be applied to soil/sediment sample results only.

These codes are assigned during the validation process and are based on the data review of the results. They are recorded in the "Validator_Qualifier" column, and are also found with the validated laboratory-applied qualifiers in the "Qualifier" column in the electronic spreadsheet contained in Attachment A.

All data users should note two facts. First, **the "R" qualifier means that the laboratory-reported value is completely unusable.** The analysis is invalid due to significant quality control problems, and provides no information as to whether the compound is present or not. Rejected values should not appear on data tables because they have no useful purpose under any circumstances. Second, **no analyte concentration is guaranteed to be accurate even if all associated quality control is acceptable.** While strict quality control conformance provides well-defined confidence in the reported results, any analytical result will always contain some error.

The user is also cautioned that the validation effort is based on the materials provided by the laboratory. Software manipulation, resulting in misleading raw data printouts, cannot be routinely detected during validation; unless otherwise stated in the report, these kinds of issues are outside the scope of this review.

Detailed Findings of Measurement Error Associated with the Analytical Analysis

I. Sample Integrity

The outdoor and indoor air samples for volatiles analysis were collected over an approximately 24-hour period from April 21 to 22, 2011, and the matching sub-slab (soil vapor) samples were collected at mid-day on April 22, 2011 for an approximately 30-minute period. The property is located in Woburn, MA. All analyses were performed within ten (10) days after sample collection, which is within the 30 day holding time defined in Method TO-15.

The canisters were delivered by laboratory courier to the field sampler's possession prior to the sample collection period; however, the custody transfer was not recorded on the Chain of Custody documents as required in the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010). The canisters were hand-delivered by laboratory courier to the laboratory three days after collection ended; the canisters were kept in the field engineer's office during the intervening days. A separate data package, L1105086, was also submitted on May 10, 2011, containing the supporting documentation (clean can certification) for the preparation and analysis of the sampling canisters, along with the raw data for the vacuum and flow controller checks, respectively, in files L1105581A.pdf and L110581B.pdf, also submitted on May 10, 2011.

The Chain of Custody (COC) and the Canister and Flow Controller Information records show that the sample canisters were collected and transported according to method specifications.

All canisters submitted to the field for use met all applicable method requirements. Based on acceptable sampling equipment conditions at receipt, sample integrity was deemed acceptable for all samples.

Field log books containing records of height of canister intake, barometric pressure, and ambient temperature at sampling locations were not submitted for review as part of this validation effort.

II. GC/MS Instrument Performance Check (Tuning)

The samples for volatiles in air analyses from SDG No. L1105581 were analyzed on a single GC/MS system identified as instrument Airpiano2. The tuning of this instrument was demonstrated with analysis of 4-bromofluorobenzene (BFB); tunes were analyzed for each 24-hour period during which the samples or associated standards were analyzed. Both BFB tunes were correctly calculated, within acceptance limits, and are reported accurately on the Form 5 summaries in the data package.

III. Initial Calibration (IC)

One IC (4/6/11, 01:07 – 07:25) was performed on instrument Airpiano2 in support of the TO-15 SIM sample analyses. The IC was performed at ten concentration levels (0.02, 0.04, 0.1, 0.2, 0.5, 1.0, 2.5, 5.0, 10, and 50 part per billion by volume [ppbv]), except that the 0.02 ppbv standard was not used for calibration of naphthalene. Documentation of all individual IC standards was present in the data package and relative

response factor (RRF) as well as percent relative standard deviation (%RSD) values were correctly calculated and accurately reported on the Form 6 summary.

Manual integrations for some target analytes, internal standards, or surrogate standards were performed in some standards and samples in this data set. The before and after ion chromatograms, the reason for the manual integration, and the analyst's initials and date were printed for each manual integration.

All average RRF values were above the 0.05 minimum criterion, and all %RSDs were below the maximum limit (30%) specified by Region I.

An Independent Calibration Verification (ICV) sample analysis at 5 ppbv was analyzed after the IC. All spiked analytes were recovered within 70 – 130 % recovery of expected values in the ICV analysis.

Since the reporting limit for naphthalene is set above the lowest standard used in the calibration, no actions are necessary on the basis of the modification of the initial calibration range for this compound.

IV. Continuing Calibration (CC)

One continuing calibration (CC) standard was run in support of the TO-15 SIM sample analyses reported in this data package. Documentation of the CC standard was present and RRF as well as percent difference (%D) values were reported on the Form 7 summary within the data package. Sample results were properly reported using the average RRF of the calibration curve for quantitation. All RRF values were above the 0.05 minimum criterion, and al %D values were below the maximum limit (25%) specified by Region 1, with the following exceptions:

Table 1. Continuing Calibration (CC) Standard Exceedances

Method	CC Date & Time	Analyte	%D	Associated Samples
TO-15 SIM	4/30/10 16:24	methyl tert-butyl ether (MTBE)	+25.7	all samples
		trans-1,3-dichloropropene	+28.7	

It should be noted that a positive % D value (the CC response factor is less than the IC response factor) will result in a low bias for positive detects, and a negative % D will result in a high bias for positive detects.

On the basis of the unacceptably high %D value in the associated CC standard, results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

V. Blanks

Results for one air-matrix laboratory method blank (MB) were reported in association with the TO-15 SIM sample analyses. No target compounds were found in the MB, with the exception that 0.131 ug/m^3 naphthalene (action limit 0.262 ug/m^3) was detected in the MB identified as WG465568-4BLANK.

One trip blank (TB), which was used as a field blank, was reported in this data package. No target compounds were found in the TB.

Neither a trip blank nor a field blank is required for Method TO-15.

On the basis of laboratory contamination, positive results for naphthalene greater than the sample-specific (adjusted) QL but less than the action limit (at twice the detected concentration) in samples IA-01 (location IA-7O-1) and IA-02 (IA-7O-2) were qualified as less than the reported value (U).

VI. Surrogate Compounds

No surrogate compounds are used in these methods.

VII. Internal Standards (IS)

All IS areas and retention times (RT) were within the established QC limits for all reported sample analyses in this data package.

VIII. Laboratory Duplicates

A matrix spike/matrix spike duplicate (MS/MSD) analysis is not used in this method. A laboratory duplicate analysis of a field sample (matrix duplicate) analysis is also not required but was performed per laboratory protocols. A field sample from another Woburn location was used for laboratory duplicate analysis (L1105581-13) for this project. Relative percent difference (RPD) values were reported on a Form 3 summary within the data package.

Precision in the laboratory duplicate analyses (6.0 %RPD) was acceptable (less than 30 % RPD, for all analytes greater than five times the reporting limit) on the basis of professional judgment.

IX. Field Duplicates

No field duplicates were collected in this sample set,so field precision could not be evaluated.

X. Sensitivity Check

An MDL study for the TO-15 SIM method was analyzed by the laboratory on May 7, 2009, and the most recent verification study was performed between on February 3 and 4, 2010. All target analytes in the statistical study had calculated MDLs below the method quantitation limits (QLs), and demonstrated acceptable ratios (at least 3:1) of the QL to the MDL. The QLs are also supported by the low concentration standard (at 0.020 ppbv) in the initial calibration.

Project objectives required a low reporting limit (RL) for naphthalene, and in order to achieve project objectives for detection limits, the analytes 1,2-dibromoethane (EDB), bromodichloromethane, and naphthalene were evaluated by the laboratory down to one-half the RL; concentrations between one-half the RL and the RL were reported with a "J" qualifier to indicate that this was an estimated concentration on the Form 1 summaries; results below the QL were only detected for naphthalene in this sample set.

On the basis of acceptable sensitivity and accuracy, as demonstrated by the MDL study and supported by the initial calibration, all results for the TO-15 SIM method (detects and non-detects) not qualified for other reasons are deemed acceptable as reported.

XI. Performance Evaluation Samples (PES)/Accuracy Check

One zero blind PE samples (commonly known as a laboratory control sample, LCS) was prepared and analyzed by the laboratory in support of the TO-15 SIM sample analyses. All target analytes were spiked into the QC samples at 5 ppbv. Percent recoveries (%R) were correctly calculated for the spiked compounds, accurately reported on the Form 3 summaries in the data package, and were within the laboratory established QC limits (70 - 130 %R) for all target analytes. No spiked duplicate analyses were performed for either method, so laboratory precision was not evaluated using spiked analyses.

No external single-blind PES sample for either method was required or submitted with the samples in this data set.

XII. Target Compound Identification

Reported target compounds were correctly identified for all samples in this data set.

XIII. Compound Quantitation and Reported Quantitation Limits

Target compound quantitation and practical quantitation limits (PQLs) were accurately reported on the Form 1 summaries. Results below the RL are not reported by the laboratory for this method. However, at the client's request, positive results for naphthalene, bromodichloromethane, and 1,2-dibromoethane (EDB) were evaluated down to one-half the RL, and reported with a "J" qualifier by the laboratory on the Form 1s.

One compound was reported with reporting limits slightly higher than specified in the QAPP. Total xylenes were reported with a quantitation limit of 0.260 ug/m^3. No qualifications were deemed necessary on the basis of the RL slightly above that specified in the QAPP for total xylenes, since this concentration is still well below the risk screening level. However, in sample SS-1 (location SS-7O-1; laboratory ID L1105581-09), the laboratory recommends that the concentration of total xylenes should be considered estimated due to the do-elution of a non-target peak in this analysis.

On the basis of co-elution of a non-target peak with o-xylene, the result for xylenes (total)in SS-1 (SS-7O-1) was qualified as estimated (J).

The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers (results below the QL were only detected for naphthalene in this sample set).

The values that the validator has judged to be acceptable are presented on the electronic deliverable generated from the project database (Attachment A). Qualifiers applied by the validator during the validation effort have been listed on the electronic spreadsheet in an additional column labeled "Validator_Qualifier". The column labeled "Qualifier" contains both qualifiers applied by the laboratory and those applied by the validator; all qualifiers in this column have been accepted or changed during the validation effort. The column labeled "PreValidationFlag", which is generated by the database utility, also indicates which qualifiers were changed by the validator. Sample-specific quantitation limits may be found on the Form 1 for each sample or in the electronic deliverable (Attachment A, column "ReportingLimit").

The Form 1s submitted in the data package present results in units of ug/m^3 as well as in ppbv. Results are also presented almost entirely in units of ug/m^3 in the electronic data deliverable (EDD). Both the forms and the EDD were examined during the data validation process.

All positive results are listed on the electronic data deliverable, whether or not the value or qualifier was changed as a result of the validation. All non-detected results are listed on the electronic data deliverable with a Qualifier of "U" or "UJ"; these are also found as less-than (<) values in the "TextResult" column. If the reported result value was changed during the validation effort from a positive result to a value representing a concentration not detected at or below, the value representing the new reporting limit is reported as the Result with a Validator Qualifier of "U" or "UJ" and a "<" sign in the "TextResult" column.

XIV. Tentatively Identified Compounds (TICs)

Evaluation of unidentified, non-target analyte peaks was not requested or performed for these samples.

XV. System Performance

The analytical system appears to have been working acceptably, based on instrument printouts and spectral quality.

XVI. Overall Evaluation of Data

Findings of the validation effort resulted in the following qualifications:

- On the basis of the unacceptably high %D value in the associated CC standard, results for methyl tert-butyl ether (MTBE) and trans-1,3-dichloropropene in all samples were qualified as estimated (UJ).

- On the basis of laboratory contamination, positive results for naphthalene greater than the sample-

specific (adjusted) QL but less than the action limit in samples IA-01 (IA-7O-01) and IA-02 (IA-7O-02) were qualified as less than the reported value (U).

- On the basis of co-elution of a non-target peak with o-xylene, the result for xylenes (total) in SS-1 (SS-7O-1) was qualified as estimated (J).

- The laboratory appropriately applied "J" qualifiers to the CLP-like sample Form 1s when the concentration of an analyte was less than the sample-specific QL for the analytes naphthalene, 1,2-dibromoethane, and bromodichloromethane in the TO-15 SIM analysis. The validator did not remove these qualifiers.

XVII. Documentation

The required records for canister cleanliness were submitted as a separate data package, SDG No. L1102539, and all required records were properly included with this data package. Canister cleanliness and auxiliary equipment status was acceptable upon release from the laboratory, and appropriate checks and actions were performed as required upon sample and equipment receipt.

The chain of custody (COC) records were present and accurately completed for all reported samples.

Data presentation was acceptable, with the following observations:

- The canisters were delivered by laboratory courier to the field sampler's possession; however, the custody transfer was not recorded on the Chain of Custody documents as required in the Field-Laboratory Coordination Memorandum (Phoenix Chemistry Services, March 25, 2010). For future sampling efforts, it is recommended that the laboratory COC record be initiated at the time of release of the canisters from the laboratory.

- One compound was reported with reporting limits slightly higher than specified in the QAPP. Total xylenes were reported with a quantitation limit of 0.260 ug/m^3.

This validation report should be considered part of the data package for all future distributions of the TO-15 SIM (volatiles in air) analysis data for SDG No. L1105581.

ATTACHMENT A

ELECTRONIC DELIVERABLE (EDD)
SDG No. L1105581
Selected Volatiles in Air Samples
(submitted electronically)

ARCADIS

Appendix D

Laboratory Analytical Data Package

ANALYTICAL REPORT

Lab Number:	L1105581
Client:	Arcadis 482 Congress Street Suite 501 Portland, ME 04101
ATTN:	Nadine Weinberg
Phone:	(207) 828-0046
Project Name:	UNIFIRST WELLS G&H
Project Number:	MA000989.0002.0003
Report Date:	05/06/11

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1105581-01	OA-01	WOBURN, MA	04/22/11 08:49
L1105581-02	IA-01	WOBURN, MA	04/22/11 10:03
L1105581-03	IA-02	WOBURN, MA	04/22/11 10:04
L1105581-04	IA-03	WOBURN, MA	04/22/11 10:13
L1105581-08	TRIP BLANK	WOBURN, MA	04/21/11 00:00
L1105581-09	SS-1	WOBURN, MA	04/22/11 11:45
L1105581-10	SS-2	WOBURN, MA	04/22/11 12:02

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

Volatile Organics in Air (SIM)
The canister certification results are provided as an addendum.

Volatile Organics in Air (SIM)
1,2-Dibromoethane, Bromodichloromethane and Naphthalene were evaluated to 1/2 the RL and are J qualified if the concentration is below the quantitation limit (RDL), but greater than or equal to 1/2 the RDL.
Values are estimated.

L1105581-09 results for Xylenes (total) should be considered estimated due to co-elution with a non-target peak.

Method blank, WG465568-4, has Naphthalene which is J qualified.

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Case Narrative (continued)

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kathleen M. O'Brien Kathleen O'Brien

Title: Technical Director/Representative

Date: 05/06/11

AIR

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-01
Client ID: OA-01
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 19:33
Analyst: RY

Date Collected: 04/22/11 08:49
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.102	0.070	0.070	0.326	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.056	0.020	0.020	0.352	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.020	0.020	0.020	0.087	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	0.149	0.050	0.050	0.561	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-01
Client ID: OA-01
Sample Location: WOBURN, MA
Date Collected: 04/22/11 08:49
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	89		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-02
Client ID: IA-01
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 20:10
Analyst: RY

Date Collected: 04/22/11 10:03
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.064	0.020	0.020	0.314	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.058	0.020	0.020	0.234	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.084	0.020	0.020	0.186	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.276	0.070	0.070	0.881	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.053	0.020	0.020	0.333	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.050	0.020	0.020	0.244	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.128	0.020	0.020	0.555	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.026	0.050	0.025	0.136	0.262	0.131	J	1
XYLENE (TOTAL)	0.364	0.060	0.060	1.58	0.260	0.260		1
Tetrachloroethene	0.054	0.020	0.020	0.366	0.136	0.136		1
Toluene	0.703	0.050	0.050	2.65	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-02
Client ID: IA-01
Sample Location: WOBURN, MA
Date Collected: 04/22/11 10:03
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	90		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	96		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-03
Client ID: IA-02
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 20:47
Analyst: RY

Date Collected: 04/22/11 10:04
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.070	0.020	0.020	0.344	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.066	0.020	0.020	0.267	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.102	0.020	0.020	0.225	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.302	0.070	0.070	0.964	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.053	0.020	0.020	0.333	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.052	0.020	0.020	0.254	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.141	0.020	0.020	0.612	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.030	0.050	0.025	0.157	0.262	0.131	J	1
XYLENE (TOTAL)	0.417	0.060	0.060	1.81	0.260	0.260		1
Tetrachloroethene	0.054	0.020	0.020	0.366	0.136	0.136		1
Toluene	0.743	0.050	0.050	2.80	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-03
Client ID: IA-02
Sample Location: WOBURN, MA
Date Collected: 04/22/11 10:04
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	90		60-140
bromochloromethane	86		60-140
chlorobenzene-d5	96		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-04
Client ID: IA-03
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 21:25
Analyst: RY

Date Collected: 04/22/11 10:13
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	0.082	0.020	0.020	0.403	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	0.093	0.020	0.020	0.376	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	0.103	0.020	0.020	0.228	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.310	0.070	0.070	0.990	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	0.055	0.020	0.020	0.346	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.052	0.020	0.020	0.254	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.144	0.020	0.020	0.625	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	0.447	0.060	0.060	1.94	0.260	0.260		1
Tetrachloroethene	0.043	0.020	0.020	0.291	0.136	0.136		1
Toluene	0.784	0.050	0.050	2.95	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-04
Client ID: IA-03
Sample Location: WOBURN, MA
Date Collected: 04/22/11 10:13
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	87		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-08
Client ID: TRIP BLANK
Sample Location: WOBURN, MA
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:55
Analyst: RY

Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-08
Client ID: TRIP BLANK
Sample Location: WOBURN, MA
Date Collected: 04/21/11 00:00
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	94		60-140
bromochloromethane	99		60-140
chlorobenzene-d5	96		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-09
Client ID: SS-1
Sample Location: WOBURN, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 05/01/11 02:59
Analyst: RY

Date Collected: 04/22/11 11:45
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	0.045	0.020	0.020	0.245	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	0.414	0.070	0.070	1.32	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.042	0.020	0.020	0.205	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	0.136	0.020	0.020	0.590	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	0.414	0.060	0.060	1.80	0.260	0.260		1
Tetrachloroethene	7.85	0.020	0.020	53.2	0.136	0.136		1
Toluene	1.70	0.050	0.050	6.40	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-09
Client ID: SS-1
Sample Location: WOBURN, MA
Date Collected: 04/22/11 11:45
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	0.030	0.020	0.020	0.161	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	81		60-140
bromochloromethane	84		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-10
Client ID: SS-2
Sample Location: WOBURN, MA
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 23:55
Analyst: RY

Date Collected: 04/22/11 12:02
Date Received: 04/22/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	0.039	0.020	0.020	0.213	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	0.142	0.020	0.020	0.693	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	22.8	0.020	0.020	154	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

SAMPLE RESULTS

Lab ID: L1105581-10
Client ID: SS-2
Sample Location: WOBURN, MA
Date Collected: 04/22/11 12:02
Date Received: 04/22/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	80		60-140
bromochloromethane	82		60-140
chlorobenzene-d5	86		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:09

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-13 Batch: WG465568-4								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	0.025	0.050	0.025	0.131	0.262	0.131	J	1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003
Lab Number: L1105581
Report Date: 05/06/11

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 04/30/11 18:09

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-13 Batch: WG465568-4								
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: UNIFIRST WELLS G&H

Project Number: MA000989.0002.0003

Lab Number: L1105581

Report Date: 05/06/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 Batch: WG465568-3								
1,1,1-Trichloroethane	77		-		70-130	-		25
1,1,2-Trichloroethane	90		-		70-130	-		25
1,1-Dichloroethane	80		-		70-130	-		25
1,1-Dichloroethene	81		-		70-130	-		25
1,2,4-Trimethylbenzene	111		-		70-130	-		25
1,2-Dibromoethane	107		-		70-130	-		25
1,2-Dichloroethane	80		-		70-130	-		25
1,2-Dichloropropane	85		-		70-130	-		25
1,3-Butadiene	87		-		70-130	-		25
1,3-Dichlorobenzene	116		-		70-130	-		25
1,4-Dichlorobenzene	113		-		70-130	-		25
Benzene	78		-		70-130	-		25
Bromodichloromethane	76		-		70-130	-		25
Bromoform	97		-		70-130	-		25
Carbon tetrachloride	76		-		70-130	-		25
Chlorobenzene	105		-		70-130	-		25
Chloroform	89		-		70-130	-		25
cis-1,2-Dichloroethene	88		-		70-130	-		25
Ethylbenzene	105		-		70-130	-		25
Methylene chloride	76		-		70-130	-		25
Methyl tert butyl ether	74		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: UNIFIRST WELLS G&H

Project Number: MA000989.0002.0003

Lab Number: L1105581

Report Date: 05/06/11

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 Batch: WG465568-3								
Naphthalene	114		-		70-130	-		25
p/m-Xylene	107		-		70-130	-		25
o-Xylene	106		-		70-130	-		25
Tetrachloroethene	105		-		70-130	-		25
Toluene	92		-		70-130	-		25
trans-1,2-Dichloroethene	75		-		70-130	-		25
trans-1,3-Dichloropropene	71		-		70-130	-		25
Trichloroethene	88		-		70-130	-		25
Vinyl chloride	89		-		70-130	-		25
Isopropylbenzene	116		-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.00(

Lab Number: L1105581
Report Date: 05/06/11

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG465568-5 QC Sample: L1105581-11 Client ID: SS-4						
1,1,1-Trichloroethane	ND	ND	ppbV	NC		25
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
1,2,4-Trimethylbenzene	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
1,2-Dichloroethane	ND	ND	ppbV	NC		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	ND	ND	ppbV	NC		25
Benzene	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
Bromoform	ND	ND	ppbV	NC		25
Carbon tetrachloride	0.027	0.027	ppbV	0		25
Chlorobenzene	ND	ND	ppbV	NC		25
Chloroform	0.025	0.024	ppbV	4		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Ethylbenzene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.00(

Lab Number: L1105581
Report Date: 05/06/11

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-13 QC Batch ID: WG465568-5 QC Sample: L1105581-11 Client ID: SS-4					
Methylene chloride	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
Naphthalene	ND	ND	ppbV	NC	25
XYLENE (TOTAL)	ND	ND	ppbV	NC	25
Tetrachloroethene	1.77	1.76	ppbV	1	25
Toluene	ND	ND	ppbV	NC	25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
Trichloroethene	ND	ND	ppbV	NC	25
Vinyl chloride	ND	ND	ppbV	NC	25
Isopropylbenzene	ND	ND	ppbV	NC	25

Project Name: UNIFIRST WELLS G&H **Lab Number:** L1105581

Project Number: MA000989.0002.0003 **Report Date:** 05/06/11

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L1105581-01	OA-01	0427	#16 AMB		-	-	3.3	3.6	9
L1105581-01	OA-01	1541	6.0L Can	L1105086-01	-29.6	-1.1	-	-	-
L1105581-02	IA-01	0428	#16 AMB		-	-	3.1	3.3	6
L1105581-02	IA-01	696	6.0L Can	L1105086-14	-29.6	-4.1	-	-	-
L1105581-03	IA-02	0453	#16 AMB		-	-	3.3	3.1	6
L1105581-03	IA-02	1647	6.0L Can	L1105086-12	-29.6	-2.8	-	-	-
L1105581-04	IA-03	0194	#16 AMB		-	-	3.2	3.5	9
L1105581-04	IA-03	1606	6.0L Can	L1105086-13	-29.6	-5.7	-	-	-
L1105581-08	TRIP BLANK	0480	#16 AMB		-	-	3.2	3.3	3
L1105581-08	TRIP BLANK	1644	6.0L Can	L1105086-15	-29.6	-29.6	-	-	-
L1105581-09	SS-1	0040	#90 SV		-	-	157	158	1

Project Name: UNIFIRST WELLS G&H **Lab Number:** L1105581

Project Number: MA000989.0002.0003 **Report Date:** 05/06/11

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Cleaning Batch ID	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Out mL/min	Flow In mL/min	% RSD
L1105581-09	SS-1	1636	6.0L Can	L1105086-10	-29.6	-7.2	-	-	-
L1105581-10	SS-2	0236	#90 SV		-	-	160	167	4
L1105581-10	SS-2	786	6.0L Can	L1105086-09	-29.6	-4.3	-	-	-

Air Volatiles Can Certification

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01
Client ID: CAN 1541 FC 427
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 14:56
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST ***Lab Number:*** L1105086

Project Number: Not Specified ***Report Date:*** 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01 Date Collected: 04/15/11 00:00

Client ID: CAN 1541 FC 427 Date Received: 04/15/11

Sample Location: WOBURN Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-01
Client ID: CAN 1541 FC 427
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	104		60-140
bromochloromethane	98		60-140
chlorobenzene-d5	101		60-140

Project Name: UNIFIRST
Project Number: Not Specified

Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-09
Client ID: CAN 786 FC 236
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 19:57
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-09
Client ID: CAN 786 FC 236
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-09
Client ID: CAN 786 FC 236
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	101		60-140
bromochloromethane	96		60-140
chlorobenzene-d5	100		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-10
Client ID: CAN 1636 FC 040
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 20:34
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-10
Client ID: CAN 1636 FC 040
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST ***Lab Number:*** L1105086

Project Number: Not Specified ***Report Date:*** 05/06/11

Air Canister Certification Results

Lab ID: L1105086-10 Date Collected: 04/15/11 00:00

Client ID: CAN 1636 FC 040 Date Received: 04/15/11

Sample Location: WOBURN Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	98		60-140
bromochloromethane	94		60-140
chlorobenzene-d5	99		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-12
Client ID: CAN 1647 FC 453
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 21:49
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-12
Client ID: CAN 1647 FC 453
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST ***Lab Number:*** L1105086

Project Number: Not Specified ***Report Date:*** 05/06/11

Air Canister Certification Results

Lab ID: L1105086-12 Date Collected: 04/15/11 00:00

Client ID: CAN 1647 FC 453 Date Received: 04/15/11

Sample Location: WOBURN Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	83		60-140
bromochloromethane	87		60-140
chlorobenzene-d5	90		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-13
Client ID: CAN 1606 FC 194
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 22:26
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-13
Client ID: CAN 1606 FC 194
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-13
Client ID: CAN 1606 FC 194
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	97		60-140
bromochloromethane	93		60-140
chlorobenzene-d5	96		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-14
Client ID: CAN 696 FC 428
Sample Location: WOBURN
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 04/16/11 23:03
Analyst: RY

Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				Dilution
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-14
Client ID: CAN 696 FC 428
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-14
Client ID: CAN 696 FC 428
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	95		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	95		60-140

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID:	L1105086-15	Date Collected:	04/15/11 00:00
Client ID:	CAN 1644 FC 480	Date Received:	04/15/11
Sample Location:	WOBURN	Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	04/16/11 23:40		
Analyst:	RY		

	ppbV			ug/m3				
Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
1,1,1-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1,2-Trichloroethane	ND	0.020	0.020	ND	0.109	0.109		1
1,1-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,1-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
1,2,4-Trimethylbenzene	ND	0.020	0.020	ND	0.098	0.098		1
1,2-Dibromoethane	ND	0.020	0.010	ND	0.154	0.077		1
1,2-Dichloroethane	ND	0.020	0.020	ND	0.081	0.081		1
1,2-Dichloropropane	ND	0.020	0.020	ND	0.092	0.092		1
1,3-Butadiene	ND	0.020	0.020	ND	0.044	0.044		1
1,3-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
1,4-Dichlorobenzene	ND	0.020	0.020	ND	0.120	0.120		1
Benzene	ND	0.070	0.070	ND	0.223	0.223		1
Bromodichloromethane	ND	0.020	0.010	ND	0.134	0.067		1
Bromoform	ND	0.020	0.020	ND	0.206	0.206		1
Carbon tetrachloride	ND	0.020	0.020	ND	0.126	0.126		1
Chlorobenzene	ND	0.020	0.020	ND	0.092	0.092		1
Chloroform	ND	0.020	0.020	ND	0.098	0.098		1
cis-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
Ethylbenzene	ND	0.020	0.020	ND	0.087	0.087		1
Methylene chloride	ND	0.500	0.500	ND	1.74	1.74		1
Methyl tert butyl ether	ND	0.020	0.020	ND	0.072	0.072		1
Naphthalene	ND	0.050	0.025	ND	0.262	0.131		1
p/m-Xylene	ND	0.040	0.040	ND	0.174	0.174		1
o-Xylene	ND	0.020	0.020	ND	0.087	0.087		1
XYLENE (TOTAL)	ND	0.060	0.060	ND	0.260	0.260		1

Project Name: UNIFIRST
Project Number: Not Specified
Lab Number: L1105086
Report Date: 05/06/11

Air Canister Certification Results

Lab ID: L1105086-15
Client ID: CAN 1644 FC 480
Sample Location: WOBURN
Date Collected: 04/15/11 00:00
Date Received: 04/15/11
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Tetrachloroethene	ND	0.020	0.020	ND	0.136	0.136		1
Toluene	ND	0.050	0.050	ND	0.188	0.188		1
trans-1,2-Dichloroethene	ND	0.020	0.020	ND	0.079	0.079		1
trans-1,3-Dichloropropene	ND	0.020	0.020	ND	0.091	0.091		1
Trichloroethene	ND	0.020	0.020	ND	0.107	0.107		1
Vinyl chloride	ND	0.020	0.020	ND	0.051	0.051		1
Isopropylbenzene	ND	0.500	0.500	ND	2.46	2.46		1

Project Name: UNIFIRST ***Lab Number:*** L1105086

Project Number: Not Specified ***Report Date:*** 05/06/11

Air Canister Certification Results

Lab ID: L1105086-15 Date Collected: 04/15/11 00:00

Client ID: CAN 1644 FC 480 Date Received: 04/15/11

Sample Location: WOBURN Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**

Volatile Organics in Air by SIM - Mansfield Lab

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	90		60-140
chlorobenzene-d5	92		60-140

Project Name: UNIFIRST WELLS G&H
Project Number: MA000989.0002.0003

Lab Number: L1105581
Report Date: 05/06/11

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal
Cooler
N/A Present/Intact

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1105581-01A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-02A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-03A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-04A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-05A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-06A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-07A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-08A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-09A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-10A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-11A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-12A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)
L1105581-13A	Canister - 6 Liter	N/A	NA		Y	Present/Intact	TO15-SIM-UNI(30)

*Values in parentheses indicate holding time in days

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

GLOSSARY

Acronyms

EPA · Environmental Protection Agency.

LCS · Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD · Laboratory Control Sample Duplicate: Refer to LCS.

MDL · Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS · Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD · Matrix Spike Sample Duplicate: Refer to MS.

NA · Not Applicable.

NC · Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI · Not Ignitable.

RL · Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD · Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A · Spectra identified as "Aldol Condensation Product".

B · The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.

C · Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D · Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E · Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G · The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H · The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I · The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

P · The RPD between the results for the two columns exceeds the method-specified criteria.

Report Format: DU Report with "J" Qualifiers

Project Name:	UNIFIRST WELLS G&H	**Lab Number:**	L1105581
Project Number:	MA000989.0002.0003	**Report Date:**	05/06/11

Data Qualifiers

Q · The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R · Analytical results are from sample re-analysis.

RE · Analytical results are from sample re-extraction.

J · Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND · Not detected at the method detection limit (MDL) for the sample.

Report Format: DU Report with "J" Qualifiers

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised March 23, 2011 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0141.

Wastewater/Non-Potable Water (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

Solid Waste/Soil (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

Florida Department of Health Certificate/Lab ID: E87814. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, SM2540G.)

Solid & Chemical Materials (Inorganic Parameters: 6020, 7470, 7471, 9045. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

Air & Emissions (EPA TO-15.)

Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA 180.1, 245.7, 1631E, 3020, 6020A, 7470A, 9040, 9050A, SM2320B, 2540D, 2540G, 4500H-B, Organic Parameters: EPA 3510C, 3580A, 3630C, 3640A, 3660B, 3665A, 5030B, 8015D, 3570, 8081B, 8082A, 8260B, 8270C.)

Solid & Chemical Materials (Inorganic Parameters: EPA 1311, 3050, 3051A, 3060A, 6020A, 7196A, 7470A, 7471B, 7474, 9040B, 9045C, 9060. Organic Parameters: EPA 3540C, 3570B, 3580A, 3630C, 3640A, 3660, 3665A, 5035, 8015D, 8081B, 8082A, 8260B, 8270C.)

Biological Tissue (Inorganic Parameters: EPA 6020A. Organic Parameters: EPA 3570, 3510C, 3610B, 3630C, 3640A, 8270C.)

Air & Emissions (EPA TO-15.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: EPA, 245.1, 245.7, 1631E, 180.1, 6020A, 7470A, 9040B, 9050A, SM2540D, 2540G, 4500H+B, 2320B. Organic Parameters: EPA 8081, 8082, 8260B, 8270C.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 1311, 1312, 3050B, 3051A, 3060A, 6020A, 7470A, 7471A, 9040B, 9045C, 7196A. Organic Parameters: SW-846 3540C, 3580, 3630C, 3640A, 3660B, 3665A, 5035, 8260B, 8270C, 8015D, 8082, 8081A.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, SM2320B, EPA 200.8, SM2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 7470A, 9040B, 6020, 9010B, 9014 Organic Parameters: SW-846 3510C, 3580A, 5030B, 5035L, 5035H, 3630C, 3640C, 3660B, 3665A, 8015B 8081A, 8082, 8260B, 8270C)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9040B, 9045C, 9060. Organic Parameters: SW-846 3540C, 3570, 3580A, 5030B, 5035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 8015B.)

Atmospheric Organic Parameters (EPA TO-15)

Biological Tissue (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3630C, 3640A)

New York Department of Health Certificate/Lab ID: 11627. ***NELAP Accredited.***

Non-Potable Water (Inorganic Parameters: SM2320B, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 9014, 9040B, 120.1, SM2510B, 4500CN-E, 4500H-B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, 8082, 3510C, 5030B.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 6020, 7196A, 3060A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 1312, 3050B, 3580, 3570, 3051, 5035, 5030B.)

Air & Emissions (EPA TO-15.)

Rhode Island Department of Health Certificate/Lab ID: LAO00299. ***NELAP Accredited via LA-DEQ.***

Refer to LA-DEQ Certificate for Non-Potable Water.

Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. ***NELAP Accredited.***

Solid & Chemical Materials (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

Air (Organic Parameters: EPA TO-15)

Washington State Department of Ecology Certificate/Lab ID: C954. *Non-Potable Water* (Inorganic Parameters: SM2540D, 2510B, EPA 120.1, 180.1, 1631E, 245.7.)

Solid & Chemical Materials (Inorganic Parameters: EPA 9040, 9060, 6020, 7470, 7471, 7474. Organic Parameters: EPA 8081, 8082, 8015 Mod, 8270, 8260.)

U.S. Army Corps of Engineers

Department of Defense Certificate/Lab ID: L2217.01.

Non-Potable Water (Inorganic Parameters: EPA 6020A, SM4500H-B. Organic Parameters: 3020A, 3510C, 5030B, 8260B, 8270C, 8270C-ALK-PAH, 8082, 8081A, 8015D-SHC.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 3050B, 6020A, 7471A, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580A, 3570, 3540C, 5035A, 8260B, 8270C, 8270-ALK-PAH, 8082, 8081A, 8015D-SHC, 8015-DRO.

Air & Emissions (EPA TO-15.)

Analytes Not Accredited by NELAP

Certification is not available by NELAP for the following analytes: **8270C:** Biphenyl. **TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 2-Methylnaphthalene, 1-Methylnaphthalene.

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AIR ANALYSIS

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ALPHA TECHNICAL

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1105581

Client Information

Client: ARCADIS
Address: 482 Congress St Suite 501
Portland, ME 04101
Phone: 207-828-0046
Fax: 207-828-0062
Email: Mitch.Wadsworth@Arcadis-US.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: UniFirst wells G&H
Project Location: Woburn, MA
Project #: MA000984.0002.00003
Project Manager: Nadine Weinbers
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
SS81-1	OA-01	4/21/11	0958	4/22 0814	-29.9"	-34"	AA	MW	6L	1574	427			X					
2	IA-01	4/21/11	1003	4/22 1003	-30"	-5.6"	AA	MW	6L	696	428			X					
3	IA-02	4/21/11	1004	4/22 1004	-30"	-4.4"	AA	MW	6L	1647	453			X					
4	IA-03	4/21/11	1012	4/22 1013	-30"	-7.2"	AA	MW	6L	1606	194			X					
8	Trip Blank	4/21/11	—	—	—	—	AA	MW	6L	1644	480			X					
9	SS-1	4/22/11	1118	1145	-30"	-8.4"	SV	MW	6L	1636	040			X					can closed early as flow controller started to buzz
10	SS-2	4/22/11	1132	1202	-30"	-5.6"	SV	MW	6L	786	236			X					

*SAMPLE MATRIX CODES: AA = Ambient Air (Indoor/Outdoor); SV = Soil Vapor/Landfill Gas/SVE; Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature] 4/25/11 1005			
P. Gillett 4/25/11 1005			
[signature]	4/22/11 1430	[signature]	4/22/11 1430
[signature]	4/23/11 900	P. Gillett	4/25/11 920

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

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AIR ANALYSIS

PAGE 2 OF 2

ALPHA TECHNICAL **CHAIN OF CUSTODY**

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab:

ALPHA Job #: L1105561

Client Information

Client: ARCADIS
Address: 482 Congress St Suite 501
Portland, ME 04101
Phone: ~~207-775-5401~~ 207-828-0046
Fax: 207-828-0062
Email: Mitch.Wolstenholme@Arcadis-us.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Chi First Wells GBH
Project Location: Woburn, MA
Project #: MA000982.2007.00005
Project Manager: Noelle Weinberg
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☐ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Relinquished By:	Date/Time	Received By:	Date/Time:
4/25/11 1005			
P. Gillett 4/25/11 1005	4/22/11 1430		4/22/11 1430
	4/22/11 900	P. Gillett	4/23/11 920

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Form No: 101-02 (19-Jun-09)

ARCADIS

Appendix E

Preliminary Human Health Risk Evaluation Report

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

UniFirst Corporation

Appendix E

Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – North
Wells G&H Superfund Site
Woburn, Massachusetts

May 2011

Appendix E
Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – North
Wells G&H Superfund Site
Woburn, Massachusetts

Prepared for:
UniFirst

Prepared by:
ARCADIS U.S., Inc.
2 Executive Drive
Suite 303
Chelmsford
Massachusetts 01824
Tel 978 937 9999
Fax 978 937 7555

Our Ref.:
MA000989.0002

Date:
May 2011

ARCADIS

Table of Contents

Tables

Attachment

Appendix E
Preliminary Human Health Risk Evaluation Report

Residence, Parcel 26/ 05/ 05 – North
Wells G&H Superfund Site
Woburn, Massachusetts

1. Introduction

ARCADIS U.S., Inc. (ARCADIS) has prepared a preliminary human health risk assessment based upon validated indoor air data presented in Table 1 of the Indoor Air Quality and Vapor Intrusion Assessment: Report of Results Residence; Parcel 26/05/05 – North from samples collected on April 21-22, 2011 at the northern half of the residential duplex at Woburn Parcel Number 26/05/05 (the Residence). The list of compounds of potential concern (COPCs) is in accordance with Table 1 of the *Indoor Air Quality and Vapor Intrusion Assessment Scope of Work (SOW*) (The Johnson Company [JCO] 2010a) submitted to the United States Environmental Protection Agency (USEPA) by JCO on behalf of the UniFirst Corporation in March 2010 and Table 2 of *Indoor Air Quality and Vapor Intrusion Assessment: Report of Results (IAQA/VI)* (JCO 2010b). COPCs that were detected in any indoor air sample were considered in the risk assessment.

2. Comparison to Acute Exposure Criteria

In order to screen for potential near-term human health hazards, indoor air data were compared to two sets of acute exposure criteria, including Acute Minimal Risk Levels (MRLs) and Acute Exposure Guideline Levels (AEGLs). In addition, indoor air data were compared to occupational criteria, including Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs®) (Table 1). Acute inhalation MRLs are derived by the Agency for Toxic Substances and Disease Registry (ATSDR) for noncarcinogenic effects from exposures lasting 14 days or less. AEGLs are set by USEPA for infrequent or one-time exposures to airborne compounds. An eight-hour AEGL-1 represents a level above which it is expected that the general population could experience significant but reversible irritation or discomfort. PELs are federal standards enforceable by the Occupational Safety and Health Administration (OSHA) for an eight-hour time-weighted average occupational exposure. TLVs® are eight-hour time-weighted averages proposed by the American Conference of Governmental Industrial Hygienists (ACGIH) for occupational hazard assessment. If no acute exposure criteria or occupational criteria were available for a given compound, surrogate values were used where appropriate (Table 1). Comparisons were based on individual samples (i.e., assuming that an individual person would consistently remain at the sample location throughout the relevant exposure period).

No result exceeded acute exposure criteria. Thus, acute indoor air exposures to the COPCs would not pose significant risks of harm to human health.

3. Risk Evaluation

Indoor air and outdoor air samples were collected at the Residence on April 21 and 22, 2011. Subslab soil vapor samples were collected on April 22, 2011. The indoor air samples were collected at two locations in the basement and one location on the first floor of the Residence. Analytical results indicate that the 10 constituents were detected in indoor air (Table 2). Of these 10 constituents, carbon tetrachloride, 1,2,4-trimethylbenzene, 1,2-dichloroethane, and 1,3-butadiene were detected only in indoor air and not in sub-slab soil vapor, indicating that concentrations detected were associated with background sources.

Six of the 10 constituents detected in indoor air were also detected in sub-slab soil vapor, including benzene, chloroform, ethylbenzene, tetrachloroethene (PCE), toluene, and xylenes (Table 2). Calculated attenuation factors (AF) were 1.0 and 0.99 for ethylbenzene and xylenes, respectively, indicating these compounds were detected at nearly identical concentrations in indoor air and sub-slab soil vapor and are therefore primarily associated with background sources. The calculated AF for PCE was 0.0033, indicating potential contribution from a subsurface source. Calculated AFs for benzene, chloroform, and toluene were 0.72, 0.56, and 0.44 respectively. While these AFs may indicate potential contribution from a subsurface source, the relatively high AF values indicate that a background source is also present within the Residence.

Two chemicals were detected in sub-slab soil vapor only, including 1,1,1-trichloroethane and trichloroethene.

During pre-sampling activities, ARCADIS staff conducted a building survey to document building conditions and products that were found in both the basement and the first floor of the Residence. The second floor of the Residence was not included in the building survey, where additional background sources of some chemicals may be located. The following potential background sources were identified during the survey:

- Bleach was noted in the home during the site visit, which may be a source of chloroform via reactions with other cleaning products (Odabasi 2008).
- Spray paint canisters were noted during the building survey. These could be sources of toluene.
- Various other cleaning products and aerosols were also noted.

Risks from inhalation of volatile organic compounds in indoor air were estimated for a current resident for both long- and short-term exposures. Exposure assumptions were based on current USEPA guidance (USEPA 2009) (Table 3).

In accordance with USEPA guidance, long-term exposure was defined as 30 years for a current resident. The short-term exposure was performed for a five-year exposure in accordance with Massachusetts Department of Environmental Protection (MADEP) guidance for Imminent Hazard (IH) evaluations to determine if an IH condition existed as defined in the Massachusetts Contingency Plan (MCP) (MADEP 2008a). As specified in the MCP, the IH evaluation was performed for current use receptors: current residents.

For each constituent, the exposure point concentration in indoor air is equal to the average concentration of the three indoor air results. Residents were assumed to be present 24 hours per day in the building. Exposure parameters for each scenario are presented in Table 3.

Risks were estimated according to USEPA (2009) guidance and the MCP (MADEP 2008a). Volatile organic compounds in indoor air were not considered to pose significant cumulative risk to human health within or below the USEPA Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ for potential carcinogenic effects and a target Hazard Index (HI) of 1 for potential noncarcinogenic effects. The criteria applicable to the MADEP IH evaluation are a target excess lifetime cancer risk of $1x10^{-5}$ for potential carcinogenic effects and a target HI of 1 for potential noncarcinogenic effects.

The risk assessment was executed on all constituents that were detected in at least one indoor air sample, including several constituents that have been demonstrated *not* to be site-related. Carbon tetrachloride was detected at a similar concentration in outdoor air compared to indoor air. Ethylbenzene and xylenes were detected at equal concentrations in indoor air and sub-slab soil vapor. Benzene, ethylbenzene, and toluene were also detected in outdoor air, so ambient air may have contributed to background concentrations. These constituents are present as a result of sources within the building and are not within the scope of a release to the environment addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

4. Results

No indoor air sample exceeded acute exposure criteria or occupational criteria, and acute indoor air exposures to the COPCs are not estimated to pose significant risks to human health.

4.1 Current Resident (Short-Term)

As presented in Table 4, the cumulative estimated lifetime cancer risks for a short-term (five-year) exposure period to a current resident exposed to the average concentrations of COPCs detected in indoor air in the Residence did not exceed the MADEP IH target risk level of $1x10^{-5}$ (Table 4). Cumulative non-cancer hazards are equal to 0.2 for this exposure scenario. No IH condition as defined by the MCP was found to exist at the Residence for the short-term resident exposure scenario.

All risks to COPCs in indoor air were within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ and no individual chemical risk exceeded $1x10^{-6}$ (Table 4). It should be noted that 49% of the risk was due to exposure to constituents that were not detected in any sub-slab soil vapor sample – 1,2-dichloroethane, 1,3-butadiene, and carbon tetrachloride. Risks from benzene, chloroform, and ethylbenzene account for another 46% of total risk; these constituents are likely attributable to background sources. Risks associated with PCE only account for 6% of the total risk, or an estimated risk level of $1x10^{-7}$.

4.2 Current Resident (Long-Term)

Cumulative estimated cancer risks for a long-term (30-year) exposure period to a current resident exposed to the average concentrations of COPCs detected in indoor air were within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ (Table 5). Cumulative non-cancer hazards are equal to 0.2 for this exposure scenario. Constituents not detected in sub-slab soil vapor make up the majority of the risk (55%). The risk associated with exposure to PCE in indoor air is $8x10^{-7}$ for the long term current resident. This constitutes only 6% of the total risk for the long term resident.

5. Conclusions and Recommendations

No indoor air sample exceeded acute exposure criteria or occupational criteria, and acute indoor air exposures to the COPCs are not estimated to pose significant risks to

human health. Cumulative estimated carcinogenic and noncarcinogenic risks for current residents did not exceed target risk levels for a short-term (five-year) exposure period. No IH condition as defined by the MCP was found to exist at the Residence.

Long term estimated excess lifetime carcinogenic risks for current residents (30 years) are all within the Superfund target excess lifetime cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ considering average indoor air concentrations and do not exceed $1x10^{-5}$ under any exposure scenario. All non-cancer HIs are below 1. All supporting risk assessment tables are provided in Attachment A.

PCE was detected at low levels (0.29 to 0.37 µg/m^3) that are consistent with background sources in residences throughout the United States. USEPA's indoor air background database reported a 50th percentile value of 0.7 µg/m^3, a 75th percentile value of 1.4 µg/m^3 and a 90th percentile value of 3.8 µg/m^3 for PCE (Dawson 2008). The potential carcinogenic risk level estimated for the low levels of PCE detected in the Residence is $8x10^{-7}$ for long-term exposure, a level of risk below the most conservative end of USEPA's risk range for Superfund sites. The estimated total risk, including exposure to other compounds in the Residence originating from background sources, is $1x10^{-5}$, the majority of which occurs due to background sources. The PCE concentrations measured in the Residence also are below the MADEP (2008b) Threshold Value (TV) of 1.4 µg/m^3. According to MADEP, when compounds of concern are measured in indoor air at levels that are below TVs, it can reasonably be concluded that a complete vapor intrusion pathway does not exist.

Benzene was detected in indoor air samples at concentrations between 0.88 and 0.99 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Benzene is a common component in gasoline, crude oil and cigarette smoke and is used in the production of paints, plastics, rubbers, fibers, dyes, lubricants, detergents, drugs, and pesticides (http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=14). USEPA's indoor air background database reported a 50th percentile value of 2.5 µg/m^3, a 75th percentile value of 4.5 µg/m^3, and a 90th percentile value of 10 µg/m^3 (Dawson 2008). The MADEP (2008b) TV for benzene is 2.3 µg/m^3. Multiple background sources of benzene were identified in the building itself including spray paints.

Chloroform was detected in indoor air samples at concentrations between 0.244 and 0.254 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Chlorine is commonly used to treat drinking water, swimming pools, spas, and municipal wastewater, and chlorinated tap water is a

known source of chloroform to indoor air (http://www.epa.gov/ttnatw01/hlthef/chlorofo.html). USEPA's indoor air background database reported a 50th percentile value of 1.0 µg/m^3, a 75th percentile value of 2.4 µg/m^3, and a 90th percentile value of 4.1 µg/m^3 (Dawson 2008). Notwithstanding the incidence of chloroform in indoor air as a result of widespread uses of chlorine as a disinfectant, the MADEP (2008b) TV for chloroform is 1.9 µg/m^3. Multiple background sources were identified in disinfecting products used within the building itself. These included products containing bleach, which are regularly used in the home to disinfect toys, tables, and other surfaces.

Toluene was detected in indoor air samples at concentrations between 2.65 and 2.95 µg/m^3. These results are consistent with background sources measured in indoor air throughout the United States. Toluene is a common component in gasoline and other fuels and is used in the production of paints, thinners, fingernail polish, lacquers, adhesives, and rubber (http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=29). USEPA's indoor air background database reported a 50th percentile value of 13 µg/m^3, a 75th percentile value of 27 µg/m^3, and a 90th percentile value of 51 µg/m^3 (Dawson 2008). The MADEP (2008b) TV for toluene is 54 µg/m^3. Multiple background sources were identified in the building itself including spray paints.

In accordance with the approved Vapor Intrusion Assessment Work Plan, another round of sampling will be conducted under non-heating season conditions for comparison to the first round of results. Prior to conducting the next round of sampling, ARCADIS recommends that additional steps be taken to document and, to the extent feasible, to eliminate identifiable background sources inside the Residence.

6. References

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U.S. Environmental Protection Agency (USEPA). 2009. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment). Office of Superfund Remediation and Technology Innovation. EPA-540-R-070-002. January.

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Table 1. Acute and Occupational Exposure Criteria for COPCs Detected in Indoor Air

Compound	ATSDR MRL	USEPA AEGL	OSHA PEL	ACGIH TLV
1,2,4-Trimethylbenzene	NA	2.21E+05	NA	1.23E+05
1,2-Dichloroethane	NA	NA	2.02E+05	NA
1,3-Butadiene	2.21E+02	1.48E+06	2.21E+03	4.42E+03
Benzene	2.87E+01	2.87E+04	3.19E+04	1.60E+03
Carbon tetrachloride	NA	1.20E+05	6.30E+04	3.15E+04
Chloroform	4.87E+02	1.41E+05	2.40E+05	4.87E+04
Ethylbenzene	4.34E+04	1.43E+05	4.35E+05	4.34E+05
Tetrachloroethene	1.36E+03	2.38E+05	6.79E+05	1.70E+05
Toluene	3.76E+03	7.53E+05	7.53E+05	7.53E+04
Xylenes	8.67E+03	5.64E+05	4.35E+05	4.34E+05

Notes:

All levels in $\mu g/m^3$. Levels reported in parts per million (ppm) were first converted to mg/m^3: (level in ppm)*(molecular weight)/24.45.

COPC = compound of potential concern

NA = value not available

ATSDR MRL = Agency for Toxic Substances and Disease Registry Minimum Risk Level (acute inhalation exposure)

USEPA AEGL = US Environmental Protection Agency Acute Exposure Guideline Level (8-hour AEGL 1; AEGL 2 if AEGL 1 not reported).

OSHA PEL = Occupational Safety and Health Administration Permissible Exposure Limits (29 CFR 1910 Subpart Z)

ACGIH TLV = American Conference of Governmental Industrial Hygienists Threshold Limit Value® (time-weighted average)

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Table 2. Residential Indoor Air and Sub-slab Soil Vapor Data with Attenuation Factors

Sample Name: Location: Date Collected:	Units	IA-1 Basement 4/22/2011	IA-2 Basement 4/22/2011	IA-3 1st Floor 4/22/2011	Average Detected Concentration in Indoor Air	SS-1 Sub-Slab 4/22/2011	SS-2 Sub-Slab 4/22/2011	Average Detected Concentration Sub-Slab Soil Vapor	OA-1 Outdoor 4/22/2011	Average Attenuation Factor (a) Sub-Slab to
1,1,1-Trichloroethane	ug/m3	0.109 U	0.109 U	0.109 U	ND	0.245	0.213	0.229	0.109 U	NA
1,1,2-Trichloroethane	ug/m3	0.109 U	0.109 U	0.109 U	ND	0.109 U	0.109 U	ND	0.109 U	NA
1,1-Dichloroethane	ug/m3	0.0809 U	0.0809 U	0.0809 U	ND	0.0809 U	0.0809 U	ND	0.0809 U	NA
1,1-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U	0.0792 U	ND	0.0792 U	NA
1,2,4-Trimethylbenzene	ug/m3	0.314	0.344	0.403	0.354	0.0982 U	0.0982 U	ND	0.0982 U	NA
1,2-Dibromoethane	ug/m3	0.154 U	0.154 U	0.154 U	ND	0.154 U	0.154 U	ND	0.154 U	NA
1,2-Dichloroethane	ug/m3	0.234	0.267	0.376	0.292	0.0809 U	0.0809 U	ND	0.0809 U	NA
1,2-Dichloropropane	ug/m3	0.0924 U	0.0924 U	0.0924 U	ND	0.0924 U	0.0924 U	ND	0.0924 U	NA
1,3-Butadiene	ug/m3	0.186	0.225	0.228	0.213	0.0442 U	0.0442 U	ND	0.0442 U	NA
1,3-Dichlorobenzene	ug/m3	0.12 U	0.12 U	0.12 U	ND	0.12 U	0.12 U	ND	0.12 U	NA
1,4-Dichlorobenzene	ug/m3	0.12 U	0.12 U	0.12 U	ND	0.12 U	0.12 U	ND	0.12 U	NA
Benzene	ug/m3	0.881	0.964	0.99	0.945	1.32	0.223 U	**1.32**	0.326	0.72
Bromodichloromethane	ug/m3	0.134 U	0.134 U	0.134 U	ND	0.134 U	0.134 U	ND	0.134 U	NA
Bromoform	ug/m3	0.206 U	0.206 U	0.206 U	ND	0.206 U	0.206 U	ND	0.206 U	NA
Carbon Tetrachloride	ug/m3	0.333	0.333	0.346	0.337	0.126 U	0.126 U	ND	0.352	NA
Chlorobenzene	ug/m3	0.092 U	0.092 U	0.092 U	ND	0.092 U	0.092 U	ND	0.092 U	NA
Chloroform	ug/m3	0.244	0.254	0.254	0.251	0.205	0.693	0.449	0.0976 U	0.56
cis-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U	0.0792 U	ND	0.0792 U	NA
Ethylbenzene	ug/m3	0.555	0.612	0.625	0.597	0.59	0.0868 U	**0.59**	0.087	1.0
Isopropylbenzene	ug/m3	2.46 U	2.46 U	2.46 U	ND	2.46 U	2.46 U	ND	2.46 U	NA
Methylene Chloride	ug/m3	1.74 U	1.74 U	1.74 U	ND	1.74 U	1.74 U	ND	1.74 U	NA
Methyl tert-butyl ether	ug/m3	0.072 UJ	0.072 UJ	0.072 UJ	ND	0.072 UJ	0.072 UJ	ND	0.072 UJ	NA
Naphthalene	ug/m3	0.136 UJ	0.157 UJ	0.262 U	ND	0.262 U	0.262 U	ND	0.262 U	NA
Tetrachloroethene	ug/m3	0.366	0.366	0.291	0.341	53.2	154	104	0.136 U	0.0033
Toluene	ug/m3	2.65	2.8	2.95	2.80	6.4	0.188 U	**6.4**	0.561	0.44
trans-1,2-Dichloroethene	ug/m3	0.0792 U	0.0792 U	0.0792 U	ND	0.0792 U	0.0792 U	ND	0.0792 U	NA
trans-1,3-Dichloropropene	ug/m3	0.0907 UJ	0.0907 UJ	0.0907 UJ	ND	0.0907 UJ	0.0907 UJ	ND	0.0907 UJ	NA
Trichloroethene	ug/m3	0.107 U	0.107 U	0.107 U	ND	0.161	0.107 U	**0.161**	0.107 U	NA
Vinyl Chloride	ug/m3	0.0511 U	0.0511 U	0.0511 U	ND	0.0511 U	0.0511 U	ND	0.0511 U	NA
Xylenes (total)	ug/m3	1.58	1.81	1.94	1.78	1.8 J	0.26 U	**1.8**	0.26 U	0.99

Notes:
(a) Attenuation Factor calculated as the ratio of the average detected indoor air to average detected sub-slab soil vapor concentration
U - The compound was analyzed for but not detected. The associated value is the compound quantitation limit
ug/m3 - Micrograms per cubic meter
IA - Indoor air sample
OA - Ambient air sample
SS - Sub-slab soil vapor sample
NA - Not applicable
ND - Not detected
Bold - Value given is detected concentration only, as compound was detected in one sample only

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Table 3. Exposure Assumptions for the Estimation of Risks from Inhalation of Volatile Constituents in Indoor Air for a Resident

Parameter	Units	Current Future Resident – Short Term			Current Future Resident – Long Term		
		Value	Source	Comment	Value	Source	Comment
Exposure Time	hours/day	24	(a)		24	(a)	
Exposure Frequency	days/year	350	(a)		350	(a)	
Exposure Duration	years	5	(b)		30	(a)	
Averaging Time – Cancer	hours	613200	(a)		613200	(a)	
Averaging Time – Non-Cancer	hours	262800	(a)		262800	(a)	

Notes:
(a) USEPA 2009
(b) MADEP 2008a

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Table 4. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.54E-04	0.007	NA	NA	3.39E-04	NA	0.05	NA	24%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.92E-04	2.4	0.000026	2.00E-05	2.80E-04	5E-07	0.0001	23%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.13E-04	0.002	0.00003	1.46E-05	2.04E-04	4E-07	0.1	20%	50%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.45E-04	0.03	0.0000078	6.47E-05	9.06E-04	5E-07	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.37E-04	0.1	0.000006	2.31E-05	3.23E-04	1E-07	0.003	6%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.51E-04	0.098	0.000023	1.72E-05	2.40E-04	4E-07	0.002	18%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	5.97E-04	1	0.0000025	4.09E-05	5.73E-04	1E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.41E-04	0.27	0.0000059	2.34E-05	3.27E-04	1E-07	0.001	6%	1%
Toluene	2.80E-03	5	NA	NA	2.68E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.78E-03	0.1	NA	NA	1.70E-03	NA	0.02	NA	8%
Total						2E-06	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

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Table 5. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.54E-04	0.007	NA	NA	3.39E-04	NA	0.05	NA	24%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.92E-04	2.4	0.000026	1.20E-04	2.80E-04	3E-06	0.0001	23%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.13E-04	0.002	0.00003	8.75E-05	2.04E-04	3E-06	0.1	20%	50%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.45E-04	0.03	0.0000078	3.88E-04	9.06E-04	3E-06	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.37E-04	0.1	0.000006	1.39E-04	3.23E-04	8E-07	0.003	6%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.51E-04	0.098	0.000023	1.03E-04	2.40E-04	2E-06	0.002	18%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	5.97E-04	1	0.0000025	2.45E-04	5.73E-04	6E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.41E-04	0.27	0.0000059	1.40E-04	3.27E-04	8E-07	0.001	6%	1%
Toluene	2.80E-03	5	NA	NA	2.68E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.78E-03	0.1	NA	NA	1.70E-03	NA	0.02	NA	8%
Total						1E-05	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

Appendix A

Risk Tables

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Table A1. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-1 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.14E-04	0.007	NA	NA	3.01E-04	NA	0.04	NA	23%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.34E-04	2.4	0.000026	1.60E-05	2.24E-04	4E-07	0.0001	20%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.86E-04	0.002	0.00003	1.27E-05	1.78E-04	4E-07	0.1	19%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	8.81E-04	0.03	0.0000078	6.03E-05	8.45E-04	5E-07	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.33E-04	0.1	0.000006	2.28E-05	3.19E-04	1E-07	0.003	7%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.44E-04	0.098	0.000023	1.67E-05	2.34E-04	4E-07	0.002	19%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	5.55E-04	1	0.0000025	3.80E-05	5.32E-04	1E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.66E-04	0.27	0.0000059	2.51E-05	3.51E-04	1E-07	0.001	7%	1%
Toluene	2.65E-03	5	NA	NA	2.54E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.58E-03	0.1	NA	NA	1.52E-03	NA	0.02	NA	8%
Total						2E-06	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

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Table A2. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-1 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.14E-04	0.007	NA	NA	3.01E-04	NA	0.04	NA	23%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.34E-04	2.4	0.000026	9.62E-05	2.24E-04	3E-06	0.0001	20%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	1.86E-04	0.002	0.00003	7.64E-05	1.78E-04	2E-06	0.1	19%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	8.81E-04	0.03	0.0000078	3.62E-04	8.45E-04	3E-06	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.33E-04	0.1	0.000006	1.37E-04	3.19E-04	8E-07	0.003	7%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.44E-04	0.098	0.000023	1.00E-04	2.34E-04	2E-06	0.002	19%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	5.55E-04	1	0.0000025	2.28E-04	5.32E-04	6E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.66E-04	0.27	0.0000059	1.50E-04	3.51E-04	9E-07	0.001	7%	1%
Toluene	2.65E-03	5	NA	NA	2.54E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.58E-03	0.1	NA	NA	1.52E-03	NA	0.02	NA	8%
Total						1E-05	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:
(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.
EC = exposure concentration
EPC - exposure point concentration
RfC - reference concentration
URF - unit risk factor
ADE-c - average daily exposure (cancer)
ADE-nc - average daily exposure (noncancer)
HI - noncancer hazard index
ug/mg3 - microgram per cubic milligram
NA - Not available
ND - Not detected
mg/m3 - milligram per cubic meter

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Table A3. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-2 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.44E-04	0.007	NA	NA	3.30E-04	NA	0.05	NA	22%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.67E-04	2.4	0.000026	1.83E-05	2.56E-04	5E-07	0.0001	21%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.25E-04	0.002	0.00003	1.54E-05	2.16E-04	5E-07	0.1	21%	51%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.64E-04	0.03	0.0000078	6.60E-05	9.24E-04	5E-07	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.33E-04	0.1	0.000006	2.28E-05	3.19E-04	1E-07	0.003	6%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.54E-04	0.098	0.000023	1.74E-05	2.44E-04	4E-07	0.002	18%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	6.12E-04	1	0.0000025	4.19E-05	5.87E-04	1E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.66E-04	0.27	0.0000059	2.51E-05	3.51E-04	1E-07	0.001	7%	1%
Toluene	2.80E-03	5	NA	NA	2.68E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.81E-03	0.1	NA	NA	1.74E-03	NA	0.02	NA	8%
Total						2E-06	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

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Table A4. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-2 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	3.44E-04	0.007	NA	NA	3.30E-04	NA	0.05	NA	22%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	2.67E-04	2.4	0.000026	1.10E-04	2.56E-04	3E-06	0.0001	21%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.25E-04	0.002	0.00003	9.25E-05	2.16E-04	3E-06	0.1	21%	51%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.64E-04	0.03	0.0000078	3.96E-04	9.24E-04	3E-06	0.03	23%	15%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.33E-04	0.1	0.000006	1.37E-04	3.19E-04	8E-07	0.003	6%	2%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.54E-04	0.098	0.000023	1.04E-04	2.44E-04	2E-06	0.002	18%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	6.12E-04	1	0.0000025	2.52E-04	5.87E-04	6E-07	0.001	5%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	3.66E-04	0.27	0.0000059	1.50E-04	3.51E-04	9E-07	0.001	7%	1%
Toluene	2.80E-03	5	NA	NA	2.68E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.81E-03	0.1	NA	NA	1.74E-03	NA	0.02	NA	8%
Total						1E-05	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:
(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.
EC = exposure concentration
EPC - exposure point concentration
RfC - reference concentration
URF - unit risk factor
ADE-c - average daily exposure (cancer)
ADE-nc - average daily exposure (noncancer)
HI - noncancer hazard index
ug/mg3 - microgram per cubic milligram
NA - Not available
ND - Not detected
mg/m3 - milligram per cubic meter

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Table A5. Estimated Risks to a Resident from Short Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-3 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	5
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	43800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	4.03E-04	0.007	NA	NA	3.86E-04	NA	0.1	NA	25%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	3.76E-04	2.4	0.000026	2.58E-05	3.61E-04	7E-07	0.0002	28%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.28E-04	0.002	0.00003	1.56E-05	2.19E-04	5E-07	0.1	19%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.90E-04	0.03	0.0000078	6.78E-05	9.49E-04	5E-07	0.03	22%	14%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.46E-04	0.1	0.000006	2.37E-05	3.32E-04	1E-07	0.003	6%	1%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.54E-04	0.098	0.000023	1.74E-05	2.44E-04	4E-07	0.002	16%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	6.25E-04	1	0.0000025	4.28E-05	5.99E-04	1E-07	0.001	4%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	2.91E-04	0.27	0.0000059	1.99E-05	2.79E-04	1E-07	0.001	5%	0%
Toluene	2.95E-03	5	NA	NA	2.83E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.94E-03	0.1	NA	NA	1.86E-03	NA	0.02	NA	8%
Total						2E-06	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter

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Table A6. Estimated Risks to a Resident from Long Term Exposure to Volatile Constituents in Indoor Air via Inhalation - Sample IA-3 26/05/05 North

Parameter	Definition	Units	Value
ET	Indoor Air Exposure Time	hours/day	24
EF	Indoor Air Exposure Frequency	days/yr	350
ED	Indoor Air Exposure Duration	years	30
ATc	Indoor Air Averaging Time - Cancer	hours	613200
ATn	Indoor Air Averaging Time - Non-Cancer	hours	262800
CF	Conversion Factor	ug/mg	1000

Compound	EPC (a) Indoor Air (mg/m3)	RfC (mg/m3)	URF 1/(ug/m3)	ADE-c mg/m3	ADE-nc mg/m3	Cancer Risk Indoor Air (unitless)	HI Indoor Air (unitless)	% of Total Cancer Risk (unitless)	% of Total Noncancer HI (unitless)
1,1,1-Trichloroethane	ND	5	NA	ND	ND	ND	ND	NA	NA
1,1,2-Trichloroethane	ND	NA	0.000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethane	ND	NA	0.0000016	ND	ND	ND	ND	NA	NA
1,1-Dichloroethene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,2,4-Trimethylbenzene	4.03E-04	0.007	NA	NA	3.86E-04	NA	0.1	NA	25%
1,2-Dibromoethane	ND	0.009	0.0006	ND	ND	ND	ND	NA	NA
1,2-Dichloroethane	3.76E-04	2.4	0.000026	1.55E-04	3.61E-04	4E-06	0.0002	28%	0%
1,2-Dichloropropane	ND	0.004	0.00001	ND	ND	ND	ND	NA	NA
1,3-Butadiene	2.28E-04	0.002	0.00003	9.37E-05	2.19E-04	3E-06	0.1	19%	49%
1,3-Dichlorobenzene	ND	0.2	NA	ND	ND	ND	ND	NA	NA
1,4-Dichlorobenzene	ND	0.8	0.000011	ND	ND	ND	ND	NA	NA
Benzene	9.90E-04	0.03	0.0000078	4.07E-04	9.49E-04	3E-06	0.03	22%	14%
Bromodichloromethane	ND	NA	0.000037	ND	ND	ND	ND	NA	NA
Bromoform	ND	NA	0.0000011	ND	ND	ND	ND	NA	NA
Carbon tetrachloride	3.46E-04	0.1	0.000006	1.42E-04	3.32E-04	9E-07	0.003	6%	1%
Chlorobenzene	ND	0.05	NA	ND	ND	ND	ND	NA	NA
Chloroform	2.54E-04	0.098	0.000023	1.04E-04	2.44E-04	2E-06	0.002	16%	1%
cis-1,2-Dichloroethene	ND	0.035	NA	ND	ND	ND	ND	NA	NA
Ethylbenzene	6.25E-04	1	0.0000025	2.57E-04	5.99E-04	6E-07	0.001	4%	0%
Isopropylbenzene	ND	0.4	NA	ND	ND	ND	ND	NA	NA
Methylene chloride	ND	1	0.00000047	ND	ND	ND	ND	NA	NA
Methyl tert butyl ether	ND	3	0.00000026	ND	ND	ND	ND	NA	NA
Naphthalene	ND	0.003	0.000034	ND	ND	ND	ND	NA	NA
Tetrachloroethene	2.91E-04	0.27	0.0000059	1.20E-04	2.79E-04	7E-07	0.001	5%	0%
Toluene	2.95E-03	5	NA	NA	2.83E-03	NA	0.001	NA	0%
trans-1,2-Dichloroethene	ND	0.06	NA	ND	ND	ND	ND	NA	NA
trans-1,3-Dichloropropene	ND	0.02	0.000004	ND	ND	ND	ND	NA	NA
Trichloroethene	ND	NA	0.000002	ND	ND	ND	ND	NA	NA
Vinyl chloride	ND	0.1	0.0000044	ND	ND	ND	ND	NA	NA
Xylenes	1.94E-03	0.1	NA	NA	1.86E-03	NA	0.02	NA	8%
Total						1E-05	0.2	100%	100%

$$ADE = \frac{EPC_{air} \times ET \times EF \times ED}{AT}$$

$$HI_{inh} = \frac{ADE}{RfC}$$

$$Risk = ADE \times URF \times CF$$

Notes:

(a) EPC calculated as average of detected concentrations and one-half indoor air detection limit for non-detects.

EC = exposure concentration

EPC - exposure point concentration

RfC - reference concentration

URF - unit risk factor

ADE-c - average daily exposure (cancer)

ADE-nc - average daily exposure (noncancer)

HI - noncancer hazard index

ug/mg3 - microgram per cubic milligram

NA - Not available

ND - Not detected

mg/m3 - milligram per cubic meter